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CLINICAL ADEQUACY OF A SINGLE MEASUREMENT OF VITAMIN A ABSORPTION

EDWARD L. PRATT, M.D., AND KATHLEEN R. FAHEY, A.B.

BOSTON

The measurement of the rate of absorption of vitamin A has proved to be of value in the study of patients with chronic disturbances of nutrition. Empirically it has been found to be useful in the study of these patients, even though it may be influenced by several factors besides the intestinal absorption of fat.[1] However, the time consumed in making the numerous determinations and the difficulty in obtaining several consecutive samples of venous blood from small infants has limited the usefulness of the test.

The following study, based on the curves for the rate of absorption of vitamin A for 112 patients, aged 4 weeks to 12 years, was made in order to determine the feasibility of simplifying the procedure. This study reveals that for patients in this particular age group a single determination of vitamin A and carotenoids in the blood made at an appropriate interval after administration of the test dose provides information of the same clinical value as that obtained from more frequent determinations.

Detection of the etiologic factors producing a nutritional disturbance is essential for competent treatment. Parenteral and enteral infections, congenital anomalies, pancreatic fibrosis, true celiac disease and numerous less common disorders must be considered. Absorption of vitamin A has been shown to be low in persons with pancreatic fibrosis and celiac disease.[2] However, this condition is not diagnostic of these diseases, since a low rate of absorption is found in persons with other related diseases.[2c]

The true value of the measurement of the absorption of vitamin A in the study of patients with chronic nutritional disturbances is that the finding of a normal rate of absorption practically eliminates the diagnoses of pancreatic fibrosis and celiac disease, whereas a low rate indicates the necessity for determining the enzymatic activity of the duodenal contents if one is to make an early diagnosis of pancreatic fibrosis. Since early intensive treatment offers considerable hope for patients with this disease,[3] any simplification of the steps by which the diagnosis can be reached will be of value. Also, a means of eliminating quickly and simply the possible diagnoses of pancreatic fibrosis on celiac disease for many patients with chronic nutritional disturbances would be of inestimable help to physicians and would reassure the parents of the patients.

METHODS AND RESULTS

Of the 112 tests studied for this report, 38 were made for patients with pancreatic fibrosis, as proved by clinical, roentgen and laboratory examinations, including a satisfactory enzymatic analysis of the duodenal contents, and by their clinical courses. In most instances there was a subsequent postmortem examination which verified the diagnosis. The remaining 74 tests were taken from consecutive records in the files of the laboratory. The only criterion for selection was that the fasting level of vitamin A and of carotenoids and the three hour and five hour postabsorptive levels of vitamin A had been determined. In numerous instances seven hour levels also were available.

Of the 112 patients, 15 were under 3 months of age, 22 between 3 and 6 months, 23 were between 6 months

From the Department of Pediatrics, Harvard Medical School, and the Infants' and Children's Hospital.

1. Josephs, H. W.: Studies on Vitamin A: Vitamin A and Total Lipid of the Serum in Pneumonia, Am. J. Dis. Child. **65**:712 (May) 1943.

2. (*a*) Chesney, J., and McCoord, A. B.: Vitamin A of Serum Following Administration of Haliver Oil in Normal Children and in Chronic Steatorrhea, Proc. Soc. Exper. Biol. & Med. **31**:887, 1934. (*b*) Blackfan, K. D., and May, C. D.: Inspissation of Secretion, Dilatation of the Ducts and Acini, Atrophy and Fibrosis of the Pancreas in Infants, J. Pediat. **13**:627, 1938. (*c*) May, C. D., and McCreary, J. F.: The Absorption of Vitamin A in Celiac Disease: Interpretation of the Vitamin A Absorption Test, ibid. **18**:200, 1941. (*d*) Breese, B. B., Jr., and McCoord, A. B.: Vitamin A Absorption in Celiac Disease, ibid. **15**:183, 1939.

3. (*a*) Andersen, D. H., in Brennemann, J.: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1942, vol. 1, chap. 29, sect. 2. (*b*) Farber, S.: Pancreatic Insufficiency in the Celiac Syndrome, New England J. Med. **229**:653 and 682, 1943. (*c*) Flax, L. J.; Barnes, M., and Reichert, J. L.: Vitamin A Absorption and Its Relation to Intestinal Motility in Fibrocystic Disease of the Pancreas, J. Pediat. **21**:475, 1942. (*D*) Rekers, P. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract, J. A. M. A. **122**:1243 (Aug. 28) 1943.

and 1 year, 25 were between 1 and 2 years and 27 were between 2 and 12 years.

The technic employed for the measurement of the carotenoids and the vitamin A in the blood plasma and the system of units used for expressing the values for carotenoids and vitamin A were those described by May, Blackfan, McCreary and Allen.[4]

In the measurement of the rate of absorption 0.1 cc. of percomorph liver oil (approximately 60,000 U. S. P. units per gram) per pound of body weight was administered orally. Samples of blood were collected prior to and three, five and sometimes seven hours after the administration of the test dose.

In order to determine at what interval after the ingestion of the test dose the highest level of vitamin A would be most likely to occur, the number of units that the five hour level was above or below the three hour level was charted (chart 1). The three hour level was taken as zero, and the difference between the three and five hour levels was plotted on the ordinate. These graphs demonstrate that the distribution of the highest values differed with the ages of the patients, about an equal number occurring at the end of the three and of the five hour interval in the youngest group and being confined almost entirely to the five hour interval in the older groups. Only occasionally in these age groups did the peak occur more than five hours after the administration of the test dose. None of the levels obtained at the end of seven hours exceeded those obtained after five hours by such an amount as to alter the interpretation of the test, except those obtained for patients with cretinism. In 13 instances the vitamin A content of the plasma was considerably lower five hours than it was three hours after the test dose, but in only 5 instances would the lower reading have led one to conclude that the rate of absorption was decreased when actually it was normal. Thus it is found that readings taken at the end of four hours for infants under 6 months of age and at the end of five hours for older infants and children would be most satisfactory.

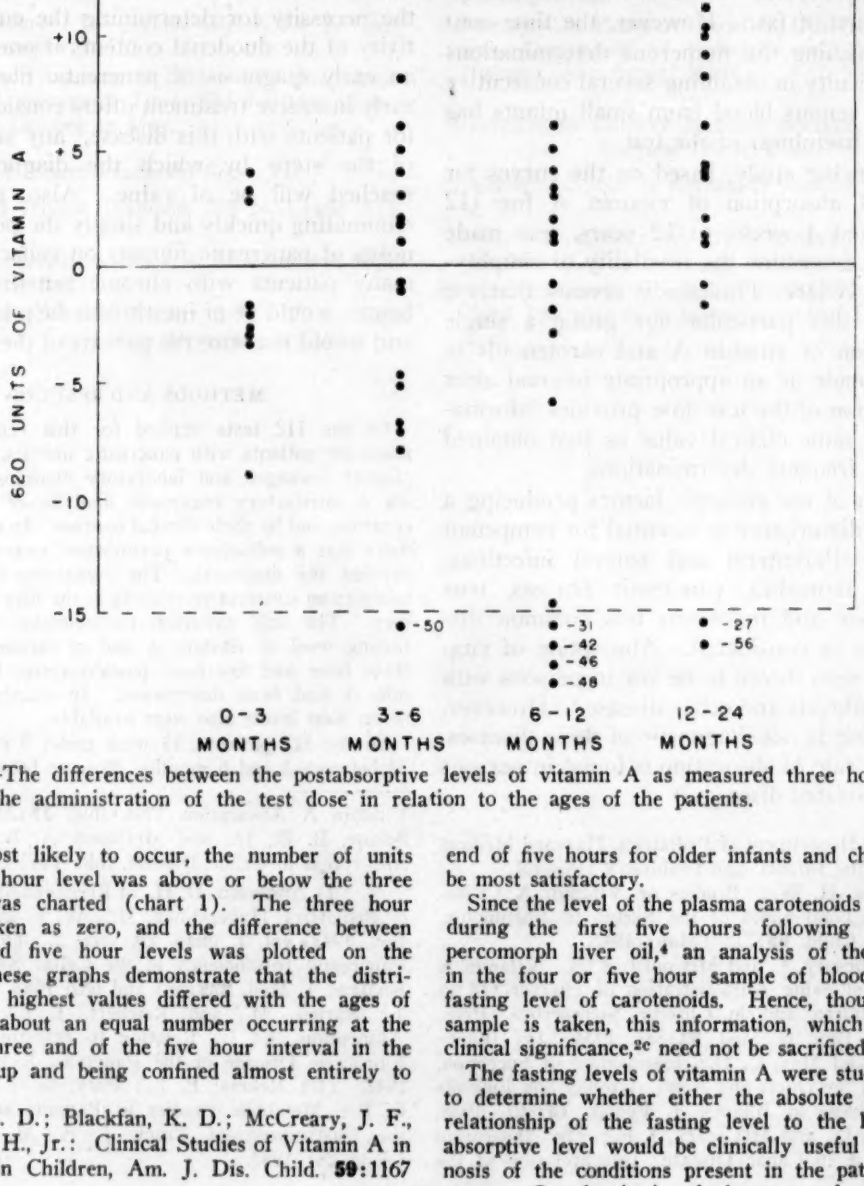

Chart 1.—The differences between the postabsorptive levels of vitamin A as measured three hours and five hours after the administration of the test dose in relation to the ages of the patients.

Since the level of the plasma carotenoids does not rise during the first five hours following ingestion of percomorph liver oil,[4] an analysis of the carotenoids in the four or five hour sample of blood defines the fasting level of carotenoids. Hence, though only one sample is taken, this information, which is of some clinical significance,[2c] need not be sacrificed.

The fasting levels of vitamin A were studied in order to determine whether either the absolute value or the relationship of the fasting level to the highest postabsorptive level would be clinically useful in the diagnosis of the conditions present in the patients of this group. On the basis of the tests of absorption

4. May, C. D.; Blackfan, K. D.; McCreary, J. F., and Allen, F. H., Jr.: Clinical Studies of Vitamin A in Infants and in Children, Am. J. Dis. Child. **59**:1167 (June) 1940.

tamin A the subjects were classified into three groups, ose with good, those with moderate and those with w postabsorptive rise in vitamin A. The ranges of e fasting levels of vitamin A for the three groups erlapped considerably, and the average fasting value r the subjects with low and with moderate post-sorptive rises was practically the same, 6.0 and 7.8 20 units respectively. Neither the difference between e peak value and the fasting value nor the quotient the peak value divided by the fasting value proved be of as much significance as the absolute height of e increase in the vitamin A content. Hence it would pear that determination of the fasting level of vita-n A can be eliminated without affecting the value of e test.

The distribution of the maximum postabsorptive levels vitamin A for 38 patients with pancreatic fibrosis d 31 normal persons is shown in chart 2.

For patients with pancreatic fibrosis the level of the asma carotenoids ranged from 0 to 10.6 L440 units, th an average value of 3.4. The highest level of tamin A attained during a test of tolerance to vita-in A was 21.5 L620 units. For 23 patients with celiac sease, May and his associates [2e] reported that the

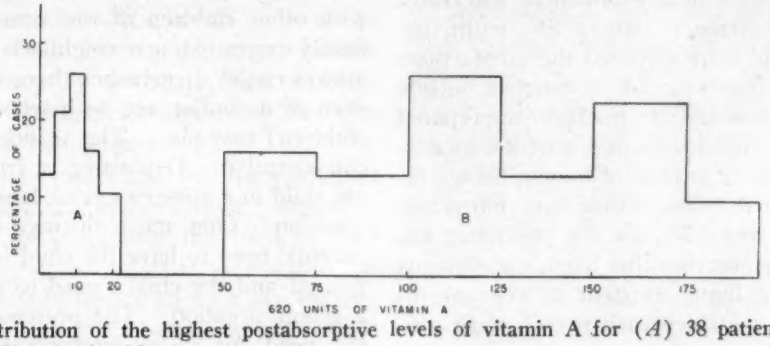

Chart 2.—Distribution of the highest postabsorptive levels of vitamin A for (*A*) 38 patients with pancreatic brosis and (*B*) 31 normal subjects.

nge for the plasma carotenoids was from 0 to 21.5 L440 nits, with an average of 6.2 L440 units and that the ghest postabsorptive level of vitamin A was 37.3 L620 nits. For 31 normal subjects in our series the content carotenoids in the blood ranged from 8.2 to 103 440 units, with an average value of 38 L440 units. he minimum postabsorptive level of vitamin A was L620 units for the normal person.

COMMENT

For patients with chronic disturbances of utrition all that one wishes to determine by easurement of the rate of absorption of vitamin is whether this function is considerably im-aired or nearly normal. Patients with im-aired absorption of vitamin A deserve further udy, particularly with reference to possible pan-reatic fibrosis or celiac disease.

As has been shown, a single sample of blood ken four hours after the administration of a st dose of percomorph liver oil for infants under months of age or five hours after the test dose r older children will enable one to determine e carotenoid content and approximately the aximal postabsorptive rise in vitamin A con-nt. A review of each individual record in this ries of 112 tests reveals that such a procedure would lead to a correct interpretation in 95 per cent of the cases.[5] In every case for which the procedure would lead to a misinterpretation the error would be in not detecting the maximal rise in the level of the blood vitamin A and the inference would be that the absorption of vitamin A was impaired to a greater extent than it actually was. However, such false inferences, since they place the patient in the group for more intensive study, would not cause the clinician to make an error in judgment which might be detrimental to the patient. The elimination of two venipunctures and determinations should increase the usefulness and availability of the test of absorption of vitamin A. The simplified procedure is as follows: One tenth of a cubic centimeter of percomorph liver oil (approximately 60,000 U. S. P. units of vitamin A per gram) per pound (0.22 cc. per kilogram) of body weight is given orally, and a single determination of the amount of carotenoids and vitamin A in the blood is made after an interval of four hours for infants under 6 months of age or after an interval of five hours for older infants and children.

CONCLUSIONS

In the differential diagnosis of chronic nutritional disturbances, the group of diseases which includes, among other conditions, pancreatic fibrosis and true celiac disease is recognized by the presence of an extensive reduction in the ability to absorb vitamin A.

Adequate evidence of significant reduction can be obtained from a single sample of blood taken at an appropriate interval after the administration of a standard dose of vitamin A.

Childrens Hospital.

5. Since the level of vitamin A was determined at only three and five hour intervals after administration of the test dose, the errors were calculated from a consideration of only the five hour level for even the youngest age group. Had a sample been taken at the end of four hours for the infants under 6 months of age it is probable that even fewer misinterpretations would have resulted.

GROUP PSYCHOTHERAPY FOR WITHDRAWN ADOLESCENTS

JOSEPH C. SOLOMON, M.D.*
Associate Chief, Department of Psychiatry, Mount Zion Hospital
AND
PEARL L. AXELROD, M.S.
SAN FRANCISCO

If one were to make the statement that a child would get along well in the world if he had been brought up in a home which afforded him a high degree of emotional security, there would hardly be a dissenting voice. It has become a well accepted doctrine that the child who has obtained all the necessary satisfactions within his own home will be able to take his place in society without any difficulty. On closer scrutiny this doctrine is only a half truth, because if the child were afforded the satisfactions of his home to the exclusion of contacts outside of the home he would be woefully unprepared for meeting the vicissitudes of a complex society. Complete emotional growth of human beings requires transitional contacts that have inherently the capacity to resemble, on the one hand, the family group and, on the other hand, the elements of conglomerate living existent in the various cultural groups to which each person must ultimately make adjustments.

Taking second thought, one becomes thoroughly cognizant of the fact that people are influenced outside of the home as well as within it. Traditionally the outside influences consist mainly of the school and the church. Each is assigned a unique responsibility for academic, moral and social teaching. The church may be looked on as the extension of the family in both the affectional and the authoritative aspects. In the school, however, the child is uniquely exposed to a fairly homogeneous age group, within which there is obtained the chance for building standards that grow out of the sharing of experiences. No matter how progressive this group experience may become, there is still an authoritative aspect to the educational setting. Education is compulsory. A voluntary group experience, on the other hand, such as is provided by playgrounds, camps, clubs and organizations like the Boy Scouts of America, takes on an entirely different complexion. The salutary effect on the development of personality of social contacts outside of the home has, if anything, had a exaggerated emphasis in recent years. Paren have pushed the young ones out of the nest, to speak, even from the moment of birth, wi the result that the close interpersonal relatio ship of parent and child has dwindled to a lo point.

Parents are usually motivated to get their ch dren early in their lives to form group contac with other children of the same age. When family moves to a new neighborhood, the questi always comes up whether there will be any ch dren of a similar age with whom the child (children) may play. This is indeed an importa consideration. Depositing a frightened 2 ye old child in a nursery school, however, is anoth question. One must distinguish between th parents' need to have the child learn to shift fo himself and the child's need to relate himself t a group situation. The preschool child center his need for close interpersonal relationship largely on his parents. In this relationship h feels protected, sheltered and secure. Other co tacts can be made smoothly and without a feelin of frustration or fear only when he has attaine a measure of emotional comfort with paren who have satisfied his basic needs. Even whe these needs have been gratified, the normal year old child, according to Bühler [1] and other can maintain social contact with only two three other children of the same age. On th surface, therefore, it seems to be thoroughl fallacious to attempt to put 3 year olds in a cla of 15 or 20 children.

Probably the basis for the formation of group is the child's fear of being left alone. Dread loss of care and love such as arises from t early separation of the child from its moth is the basis of early infantile anxiety. Th concept was elaborated in a previous publica tion [2] in which it was shown that anxiety stat

* Now serving in the Army of the United States.

From the Department of Psychiatry of Mount Zion Hospital.

1. Bühler, C.: Testing Children's Development fr Birth to School Age, New York, Farrar & Rinehar Inc., 1932.

2. Kasanin, J.; Solomon, J. C., and Axelrod, P Extrinsic Factors in the Treatment of Anxiety States Children, Am. J. Orthopsychiat. **12**:439, 1942.

children often date from as early as the age 2 years. The most salient feature of this sociation, however, is the relation of the child ot to the other children of the group but to the acher, who plays the role of substitute mother. this connection it is interesting to point out inlay's [3] observation that up to the fifth grade e major emphasis from the child's point of iew is on the pupil-teacher relationship. After at the child's orientation becomes directed ward a pupil-pupil relationship, with the teacher laying a subordinate role. This change is thorughly in keeping with other expressions of the mancipation of the child from the parental ties form associations with people like himself or least with others of his own age.

That a child who has had satisfaction in his ome can probably form outside associations has een established. It is the point of this paper that e need for these associations can be met. In e group the child learns that other children an also be loved by parents. This is acted rough by developing an understanding that they ust share love with others.

Psychologists have debated for years whether here is a social instinct. Trotter [4] spoke of uman beings as possessing the herd instinct emonstrated by other animals. He stated the elief that human beings of all ages are instincvely drawn to each other by strong physiologic emands. He maintained that the formation of group is biologically a continuation of the multiellular character of all the higher organisms. Man is a social animal through his inherent conitutional makeup according to Trotter. If one ccepts the hypothesis of the existence of a herd nstinct, then in accord with facts presented in his paper one must accept the existence of an nstinct of precisely the opposite nature.

Inasmuch as psychoanalysis has shown that elings of love and hate may exist side by side, herd instinct in the human being may be counerbalanced by a "hermit" instinct which operates the opposite direction. Human beings are not rone to seek strangers for social intercourse. nstinctively human beings seem to fear and hate ach other until they know each other. This is ue of individual persons, religious groups and ven nations. Even when a child is assured y a familiar interested adult that he will have un and enjoyment out of a club or camp, he ay prove reluctant to enter the group unless e has at least one of his good friends with him. The group has its function and even offers genuine intrinsic pleasure, but one cannot say that human beings reach out for it as, say, an infant reaches for the breast. In the experimental project described in the body of this paper both herd and hermit instincts may be discerned.

Just as any anxiety may be a reactivation of the fear that the child has on being separated from his mother, the pleasure derived from a group relationship may be a reactivation of pleasure that the child gets out of interpersonal relationships in his home. Freud [5] makes this point in a somewhat different manner by saying that the group with its leaders constitutes a reduplication of the family. One can see, then, that the basis of association is not merely the formation of a herd; it is the security that rests in adequate leadership. Adults who act in groups to espouse various causes or who form crowds or mobs react to a type of parental figure in a manner which satisfies their own emotional needs. The leader can become the loving parent when all the individual persons are threatened by real or imaginary dangers. Even association with a discussion group can represent the response to a need for security when a person is uncertain as to whether his own ideas are correct.

Further proof for the opinion that the group represents a reactivation of the family can be found in the manner in which people relate themselves to the group and to the leaders. People of all ages may act out fear of or resentment to leaders when they had previously shown similar attitudes to their parents. Similarly sibling rivalries may be duplicated in inability to get along with fellow members of a group. Often such attitudes are wholly unconscious, and the equation can be established only through the medium of analysis. There are several factors to be considered in this respect: (1) the personality of the leader, (2) the professional training for group leadership and (3) the reenactment of the family drama while the process is still acutely operative. Before the presentation of the specific material at hand, it may be of value to discuss briefly each of these points.

Two variables in the relationship of members of the group to the leader are the age of the individual members and their emotional stability. It was pointed out earlier that young children react to leaders in the manner that they react to their fathers or mothers. As they grow older, their needs are not so clearly leader centered, because none of their other activities are completely parent centered. In unstable persons, how-

3. Finlay, M.: The Classroom as a Social Group, Am. J. Orthopsychiat. **11**:521, 1941.

4. Trotter, W.: Instincts of the Herd in Peace and War, London, T. Fisher Unwin, Ltd., 1916.

5. Freud, S.: Group Psychology and Ego Development, London, Instructional Psychoanalytic Press, 1922.

ever, there has not been the usual resolution of parental fixations and hostilities; hence their reaction to a group situation can be compared in many respects to that of an exceedingly young child. Such persons may be referred to as being socially immature. When older children shy away from the group, the reaction is considered a symptom of a personality disorder. If the disorder is extreme, there may result an introverted or schizoid personality. Such persons draw away from others and live in a world of fantasy. The children who were studied in this investigation were thoroughly unhappy about their withdrawal and were motivated to overcome their difficulties. One could say that the motivations represented expressions of the herd instinct were it not for the fact that the girls were similarly unhappy in other interpersonal relationships that they likewise were striving to improve. Hendrick [6] speaks of an instinct to master. The social situation is merely one environmental challenge that the human being seeks to master. To put it in another way, the girls were not enjoying the retreat from reality; they found reality as exemplified by group relationships invitingly within reach but fraught with unknown dangers. As will be pointed out later, they all presented problems in adjustments to the members of their families.

It is already understood that parents supply both love and discipline. The love serves the purpose of satisfying the basic instinctive demands of the child, whereas the discipline represents the limits set by society on the gratification of these demands. The adequate parent is the one who can consistently pour forth a high degree of affection within the framework of a reasonable display of authority. When children grow in such an atmosphere, they possess the feeling of security that is necessary for the development of stability within themselves and of adjustment to other human beings. One would think that if a leader such as a nursery school teacher, scout master or camp counselor could offer more consistent affection and responsibility than do the parents the child would naturally gravitate to the artificial group. Such is distinctly not the case. Attempts to replace parents with professionally trained leaders failed miserably in the early stages of the Soviet experiment. Severe emotional deprivations during early childhood are not easily compensated. The answer is certainly not in the addition of added authority by getting the child out of the home into groups but in added emphasis on close parent-child ties during early childhood.

The leader as the substitute for the parent becomes invested with the dual role of acting as the protector and as the symbol of authority. Redl [7] developed this theme in his work. True as this may be, groups are not formed merely out of the parent-child substratum. There are several other factors which will be discussed later in the reports on cases. However, we are concerning ourselves for the moment with only this one aspect of group phenomena. It can be seen from the foregoing that when there is a need for love from the parent or when there is a need to defy parental authority or at least to test its limits the individual utilizes the relationship to the leader to work out the unsolved struggle. Obviously this attitude does not depend exclusively on the personality of the leader, but rather is related to what the leader represents. As a matter of fact, the more understanding the leadership, the greater is the likelihood that these hidden attitudes will be uncovered.

It is beyond the scope of this paper to discuss the various aspects of the question of training for group leadership. Suffice it to say that the personality and the training of the leader are both vital considerations. The members of the group rely on the leader as they do or did on their parents. Each considered his parent omnipotent, able to protect him against any danger. When instability of the parent person is manifest, a feeling of insecurity is engendered in the child. This fact was shown clearly by the reactions of children to the first blackouts of the war; adults entrusted with the care of children precipitated panic among their charges when they experienced panic reactions themselves. These observations were reported by one of us (J. S.) in a previous communication.[8]

Much has been written in recent years about democratic and authoritarian leadership. Lewin's [9] experiments in this field contributed greatly to the understanding of reactions of people to leadership. They showed clearly that the democratic way of life offers many advantages over both the anarchic and the autocratic. It is easy to understand how hostility is mobilized through the dictatorial form of government. Similarly, authoritative leaders can precipitate bristling resentment in persons who are reminded of similar attitudes that had been shown by their parents.

6. Hendrick, I.: Instinct and Ego During Infancy, Psychoanalyt. Quart. **11**:33, 1942.

7. Redl, F.: Group Emotion and Leadership, Psychiatry **5**:373, 1942.

8. Solomon, J. C.: Reaction of Children to Blackouts, Am. J. Orthopsychiat. **12**:659, 1942.

9. Lewin, K.: Patterns of Aggressive Behavior in Experimentally Created Social Climates, J. Social Psychol. **10**:271, 1941.

The resentment produced in this manner is another variable in group reaction to leadership.

People single out other persons to whom they can confide their difficulties. Every normal child has a best friend. Adults form friendships and marry companions. They may seek out ministers, social workers or psychiatrists when they have difficulties. These individual relationships may be a continuation of the role formerly vested in the parent or may compensate for lacks felt during earlier periods. Skills develop in persons in these professions out of their experience in dealing with others and out of the insights developed by supervised training. These skills permit the professional adviser to understand the limitations in the handling of individual problems. The differences in the knowledge of human behavior of various people who work with others, as well as the variation in time expended in the study of individual cases, has produced an arbitrary stratification of this type of work into so-called levels of treatment. These levels are exemplified in such disciplines as counseling, personnel work, social case work, psychotherapy and psychoanalysis. A similar situation exists in group work. The similarities and differences between individual work, as exemplified by case work, and group work have been ably discussed by Wilson.[10] Briefly, psychotherapy and case work represent working with individuals in order to help them reach the group, whereas group work represents working with groups in order to reach the problems of the individual members.

Group work does not imply mere congregation. Delinquent boys join together to form a gang, but when a Father Flanagan assumes leadership, the situation takes on a different aspect. Similarly, the Tuesday night bridge club is a group, but a group of mothers who have come together at the suggestion of a social worker to discuss the problems of their children arising out of the war is something different. The distinction resolves itself into the question of leadership. The sewing circle is a group, to be sure, but it bears the same relationship to therapeutic group work as the conversation of two neighbors over the back fence bears to psychotherapy.

We can distinguish at least four levels of group work. The most superficial consists of activities commonly characterized as recreation and as "education." This brings up the question whether group work is therapy or pedagogy. The argument has been smouldering for a generation with the odds swinging now in the direction of therapy. With regard to the position of group work on the superficial level, there seems to be little reason to argue. It seems to be generally true that persons with predominantly educational backgrounds have little training in the emotional connotations of group work. The trend seems to be toward incorporation of training in group work in schools of social service rather than in teachers' colleges, but this may be true only for training in the deeper levels of group work which will be mentioned presently. It remains a sad commentary on organized education that teachers, who should be experts in child behavior, are almost uniformly unsuccessful as camp counselors.

In group work on the superficial level, the major focus of the persons comprising the group is on the activity. Whether the activity is a baseball game, a trip to the zoo or a geography lesson, it is the central point in the relationship between leaders and members. Here the differences between the compulsory aspect of the school and the voluntary aspect of the play group become manifest. Teachers who have "a way with children" become outstanding members of their profession, even if their methods are unorthodox. Unorthodox pioneers have blazed the trails of progressive education. The newer ideas in education come closer to a common stamping ground between pedagogy and professional group work.

The next level of group work for the most part is removed from the educational scene, and in the field of recreation it is beyond the "let's play basketball" stage. It consists in a planned program in which the individual members have the opportunity to express their needs. The age level would make a decided difference in the relative roles of leader and members of the group. For small children a great degree of direction is needed, but in groups of older children more participation by the members is encouraged. Trained leaders should know the home backgrounds of their charges as much as possible. Confidential information should be held inviolate. Leaders should be prepared to confer with teachers and social workers on the needs of individual children.

The second level of group work has been most adequately described in a recent book by Cassidy and Baxter.[11] One of the group experiences described by these authors was the Pomo Trail Camp, in which the group was composed of students taking a course in camp counseling. One of the authors of this article (J. C. S.) was a member of the faculty of that group and had

10. Wilson, G.: Group Work and Case Work, Family Welfare Association of America.

11. Baxter, B., and Cassidy, R.: Group Experience—The Democratic Way, New York, Harper & Brothers, 1943.

occasion to participate in the program as one of the leaders. The observation of democratic and autocratic principles as a living experience proved to be both fascinatingly interesting and highly instructive. As a growth phenomenon for essentially normal persons, group work on this level offers the greatest advantages for the participants. To discuss the matter further, however, would distract attention from the essential goal of this paper, which is oriented to the handling of unstable persons.

The third level of group work can be termed social group work. It corresponds in group work to case work or superficial psychotherapy in individual therapy. It requires highly skilled workers who have the capacity for dealing with difficult problems. The groups should be small, and the program should be completely oriented to the needs of the individual participants. The family background and historical past of each member of the group should be known to the leader. Records should be kept of all the activities of the group as well as records of each member. Opportunity should be afforded for consultation with trained supervisors. The group leaders should be active participants in all conferences with social agencies and psychiatrists who are helping to determine the destiny of any member of the group. This type of work may be carried in movable groups such as those organized through the community center, the juvenile court or social agencies, or in resident groups, such as those in institutions for the care and treatment of delinquent adolescents. It is generally understood that some type of improvement in social adjustment will take place through participation in a well organized group with highly trained direction.

The fourth level of group work is that termed group therapy or, more exactly, group psychotherapy. It must be clearly understood that this delineation of levels is purely descriptive and not a clear demarcation. In the light of other work in group treatment some investigators may question whether the experiment reported in this presentation actually belongs to this fourth level of group work or conforms more nearly to what was described as the third level, or social group work. The answer to this purely academic question may be obtained by reviewing briefly some of the literature on group therapy.

The need for group therapeutic methods has arisen from the fact that individual psychotherapy is not always available for the large numbers of persons who might profit by its use. This is both an economic issue and one which is based on the number of available psychiatrists who can devote themselves to the time-consuming processes of modifying human behavior through the individualistic approach. In addition, and perhaps more important from the point of view of research, group psychotherapy has certain intrinsic powers for therapeutic success that do not exist in individual therapy.

For the most comprehensive review of the recent literature on group psychotherapy the reader is referred to an article by Thomas.[12] He highlights some of the major concepts of the subject. Thomas follows the suggestion of Moore [13] that psychotherapeutic methods are of two types, (*a*) repressive-inspirational and (*b*) analytic. We think that there is some question whether the methods that are described as repressive-inspirational should be called psychotherapeutic. For the most part they are pedagogic, somewhat authoritative and distinctly directional in nature. They seem to fit more clearly into what has been described here as the first level of group work. It may be said, too, that the fact that because a group is led by a psychiatrist certainly does not necessarily mean that group therapy, in the sense implied by the fourth level of group work, is in operation. Merely giving a series of lectures to a group of neurotic persons still constitutes pedagogy. However, when the problems of human beings are discussed, and particularly when there is an opportunity for group participation, the therapeutic possibilities increase.

Various methods are employed by different workers in the field of group psychotherapy. The English psychiatrists have been highly successful in handling war neuroses by group methods. The work of Snowden,[14] Maclay and Whitby,[15] Blair [16] and Jones [17] is worthy of note. The work of Harris,[18] Pratt,[19] Rhoades [20] and Buck [21] a

12. Thomas, G. W.: Group Psychotherapy: A Review of the Recent Literature, Psychosom. Med. **5**:166, 194

13. Moore, M.: The Practice of Psychiatry, Harvard M. Alumni Bull. **16**:53, 1942.

14. Snowden, E. N.: Mass Psychotherapy, Lancet **2**:769, 1940.

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Boston Dispensary is engaging. Although clinic is referred to as the "thought control nic," the methods seem to be much more pa-nalistic than repressive. Marsh,[22] Lazelle[23] d Wender,[24] working with psychotic patients, each with a different method of approach, m to have attained some satisfactory results. special interest is the work of Moreno[25] the psychodrama. The spontaneously staged ma described in the course of the experiment sented in this paper is typical of the work ich Moreno encourages in his unique form group psychotherapy.

All of the methods of group psychotherapy ve a few elements in common. First, there is dership; secondly, there is a homogeneous up of persons with approximately the same blems, and, thirdly, there is regularity and tinuity. In addition to these, Schilder[26] ployed psychoanalytic interpretation and aera-n of emotionally charged material. The latter proach has been used by the Oxford group, coholics Anonymous and spiritual meetings, in atmosphere of religious fervor that can be h protective and repressing. In the Schilder e of therapy, it is interpretative and educa-nal. In dealing with neurotic patients material the most intimate nature is brought before group and made a subject for general discus-n. Similarly, the interactions within the group discussed openly. A member showing hos-ty to another member, for example, receives open interpretation that he is showing sibling alry if such is indicated by his history. The ction of one person may lead to a general cussion with all members participating.

It will be noted from reading the protocol in s report that interpretations of a too revealing ture were not made to the whole group, but her in personal interviews and conversations. Full knowledge of the background and thinking of the participants must be had by the leader of the group. The manner in which this knowledge is handled depends, of course, on the skill of the therapeutist, just as it does in individual therapy.

A few workers in the field of child behavior have made interesting contributions in the field of group psychotherapy for children. Most noteworthy in this respect is the work of Bender and Woltman,[27] Slavson[28] and Svendsen and Spiker.[29] Bender has made engaging use of the puppet show as a medium for the release of group emotions. She has also worked with adolescents in groups. Slavson and Svendsen have also worked with children. The work of the former is characterized by a highly permissive atmosphere in the presence of the most violent aggressions. What is lacking in the presentations of this and other work in group therapy is a critical evaluation in the light of statistical analysis. An example of good thinking in this field with inadequate validation is the excellent contribution of Spiker[30] at the symposium on group therapy at the 1942 meeting of the American Orthopsychiatric Association. The accusation is one which academic psychologists have hurled at psychiatrists and social workers. MacFarlane[31] brings this point clearly into focus.

The need for new ideas for the treatment of maladjusted adolescents grows out of two salient facts, namely that persons of this age are difficult to reach and that there are an insufficient number of trained leaders who are capable of offering useful treatment. Concerning the latter point little need be said. As clinics and social agencies are depleted by the war, the problem becomes all the more acute. That adolescents do not relate themselves well to the individualized approach is also well known. They are too old to relate themselves quickly to adults as substitute parents and too young to see the need for help with their problems. The experiment reported in this presentation was an outgrowth of the awareness of these needs. Our efforts were

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confined to a group of withdrawn adolescent girls.

EXPERIMENT IN GROUP PSYCHOTHERAPY

Our plan in this experiment was to utilize as much information as possible from the fields of psychiatry, psychology, case work and group work without bias or preconceived notions in any one direction. It was our purpose not to establish a fixed group but to utilize a group experience to help each member of the group make an adequate social adjustment in the general life situation. We were prepared to use any unorthodox method that might be necessary in order to accomplish the greatest gains for each person within the group, without giving too much concern to the structure of the group as such. Possible complications in attempting individual therapy in a group situation were anticipated. The group functioned as a living experience in interpersonal relationships rather than merely as a medium for group catharsis.

It was our object to make the group experience similar in essence to that ideally provided by the home, which is a place in which an individual is prepared for leaving it and experiencing wider relationships. When a girl wanted to leave the group, the reaction could be looked on as a growth phenomenon indicating that the needs of that person had been served. Eleven withdrawn neurotic girls who had been ineffectively treated by the Jewish Family Service Agency, an agency for family case work, were invited to be participants in the experimental group. The girls had proved resistant to individual help from social workers and had refused to accept referrals to the Mount Zion Psychiatric Clinic. They were uniformly described as being nervous, socially shy, hermit-like and unable to make friends. Their ages ranged from 13½ to 15 years.

One of us (P. A.), a case worker with experience in group work, planned and assumed leadership of the group. To have a woman for the leader seemed to be obvious from the outset. The other of us (J. C. S.) acted as psychiatric consultant. The movement of the group as well as individually significant material was discussed in conferences. There was additional technical assistance for craft work and recreation. As the study progressed, the leaders were constantly informed about home conditions by conferring with the family case workers. It was decided that the meetings should be held not in either the Jewish Family Service Agency or the Psychiatric Clinic but in the Jewish Community Center. It was hoped that if the meetings were held there the girls could readily step into the regular group activities of the center as they became ready to do so. The group was accordingly provided with a large basement room that was devoted exclusively to this purpose. There were few furnishings in the room, but there was complete freedom for its use. On the same floor was a game room for adolescent boys and girls.

Brief résumés of the problems presented by each of the girls follow.

Jane was a confused 14 year old girl who came from an unstable home. Both parents had deserted on several occasions, and efforts had been made to place the children in foster homes. Jane was described as being negativistic, untidy, jittery and obviously unhappy. She was shy and found it difficult to relate herself to her contemporaries.

Evelyn was the oldest in a family of four. Her father had spent the last six years in a state hospital. She was a fairly attractive 15 year old girl, but she was rigid, cold and devoid of expression. She was quite shy, completely without friends and so defensive that it was difficult to evoke any emotional reaction. For two years several skilful workers from the Jewish Family Service Agency had tried to help this girl work out her problems and had found her unresponsive. Attempts to assist her in forming group relationships had also been unsuccessful.

Mildred was a shy, withdrawn 14 year old girl who gave the impression of being afraid. Her voice was low, almost inaudible, on the rare occasions when she attempted to talk. She was poorly dressed, untidy, even dirty and seemed to have little desire to look attractive. There was a long history of economic difficulty and somewhat unstable situation in the home.

Corinne, 14, was characterized as being inhibited, fearful, almost obsessive in her personal habits, with an exaggerated need to comply with her parents' wishes. Both parents were more than ordinarily severe and laid stress on decorum and respect for adults. The daughter was encouraged to pursue 'lady-like activities," and the mother had commented to the social worker with considerable pride that "Corinne is too good a girl to be interested in boys." Her major interests were occupations of a solitary nature, such as reading books and listening to the radio. She had no sustained friendships.

Ann, 13½ years old, was an extremely unhappy, neurotic girl. Her jittery, aggressive behavior and constant demands for attention made her unpopular. Both of her parents and her brother had been recent patients at the psychiatric clinic, but attempts to refer Ann had failed to bring any response. Two months prior to the formation of the group she had been placed in a foster home.

Judith was an attractive, friendly adolescent who was confused and insecure. Her home was chaotic, with the mother in a borderline psychotic condition and the father frequently in conflict with the law. Obvious rivalry with three more attractive sisters increased her uncertainty in meeting adolescent problems. She made a superficial adjustment to people but had no meaningful relationships.

Gerda was a 14 year old émigré who had come to this country with her parents in 1938. Her mother was committed to the state hospital in 1939, and Gerda became depressed and hostile toward all social workers. Because of this hostility it was necessary to accept her into the group without a recreational interview. She was timid, quiet and pensive and appeared to be delicate

e was so afraid of groups that for the first few meet-s she always brought another émigré girl. At school was isolated. Corinne asked if she might bring this nely little foreign girl" to the group.

Rachel, a 14 year old girl, was referred to the group the social worker because she was friendless and ely. She was not disliked, but she was not sought as a companion. The social worker felt that she ded assistance because she failed to respond to office erviews. The agency was unable to get information t would throw light on the girl's difficulties.

Hester was almost 16 when the group was formed. e was selected because the old records at the Jewish mily Service Agency described her as a self-conscious, id girl who found it difficult to form social contacts. e recreational interview indicated that she was sophis-ted and rather well adjusted. She was accepted for ervation and dropped out after two meetings.

Sarah, who was 14 years old, was referred to the up because she was unable to establish good relation-ps with either individual persons or groups. She was ish, grasping, uncooperative and aggressive toward er children, especially girls. She always managed to the center of attention by boasting loudly and forcing plans and ideas on the group. Since infancy Sarah lived in an environment of familial discord with quent separations and had witnessed physical abuse her mother by her father. Intense rivalry between ings in the home was reflected in the girl's relation-ps outside of the home.

Rhea, a 15 year old girl, presented an awkward ado-cent appearance. She was tall and ill at ease and a somewhat depressed expression. She had a history enuresis, nutritional fads and sexual play with her ther. She was apathetic and found it difficult to take t in any activity or conversation. Although she was nember of the Community Center and had been to up, reports from both sources indicated that she was , had no friends and made poor adjustments. (This avior persisted although she had been to the same up for at least three summers.) Separation from her ther and father and life with her stepmother no doubt tributed to the girl's insecurity and unhappiness.

It will be noted that the girls showed many ilarities; all but 2 were shy, and all had poor ationships with contemporaries as well as er neurotic symptoms. The intelligence quo-nts ranged from 85 to 115. All the girls were the eighth or ninth grade, and the chronologic s were within a range of slightly over two rs.

Each of the girls was given a preliminary erview by the leader of the group. She was ormed that a group of girls of her age was ng formed and that she was welcome to join. ring the interview the leader obtained as much ormation as possible about the personality of girl and her special interests and capabilities. e girls were told that the meetings were to held at weekly intervals and would last for hour.

For the first meeting of the group materials re provided for crafts and simple games in ich the girls had peviously expressed interest. ere was no organized program of activities. They could do as they pleased, and the leaders were there to assist them. All the girls referred to the group attended the first meeting, but three of the shyest arrived one-half hour late. As they entered the room, they completely avoided one another. There was no conversation. Each girl sought direction from the leader whom she had met previously. Each became absorbed in her own particular job.

At the first meeting a half hour passed before one girl spoke to another, and then only when the situation made speaking unavoidable. Each girl sat stiffly with her eyes glued to her work. When Corinne raised her head to look around and felt herself observed by a leader, she quickly dropped her eyes as though caught in the act of stealing. The only interpersonal communications were between leaders and girls. It became apparent from the beginning that the girls wanted to gain as much praise as possible for their various tasks. There was a subtle, implicit sense of competition. During the second meeting Mildred raised her eyes for an instant and asked Corinne what school she was attending. A few more daring ones, notably Sarah and Rhea, took up the subject with other members of the group. The leaders joined the conversation and gradually drew in some of the shyer girls on this innocuous subject of mutual interest to all of them.

Ann was somewhat different from the other girls. She fluttered around the room in an attempt to obtain the leader's complete attention, to the exclusion of the other girls. Sarah, too, bragged loudly to another girl about her achievements and her popularity at school.

Other than this, the general tone of the first few meetings was charged with stiffness and formality. At approximately the eighth meeting it was noted that some of the girls began to cluster about in groups of two or three. The interest still centered about individual crafts, but there was some interchange of talk. As a matter of fact, one or two of the girls felt sufficiently free to call across the table or wander about the room to borrow tools. They began to pass comments on the projects of others; a few even offered the suggestion that the objects being worked on could be used for personal adornment. It was about this time that the girls spontaneously asked for assistance on their projects from the leaders. Some wanted to come earlier and stay later. The sessions were prolonged to one and one-half hours. Rhea, Sarah and Jane then began to walk home together.

From the beginning of the project conferences were held with individual workers for mutual sharing of observations. These meetings were

utilized for cooperative planning of work with girls in the group as well as case work with their families. The need for cooperative planning arose when Corinne began to respond to the girls with greater freedom. She became friendly with Gerda, whom she had invited to her home. The case worker not only attempted to assist the mother with her own needs, but she also prepared her to accept Corinne's newly acquired freedom.

For four and a half months the girls continued to work with crafts without any indication of desire for other activities. Feeble attempts to organize made by Mildred met with no success. However, greater enthusiasm while at work was observed. The girls offered many original suggestions. The crafts were no longer merely a prop, but a means of personal satisfaction and self expression.

Several weeks later the beginning of group feeling was noticed; with it there developed a growing restlessness with the individualized tasks represented by crafts. Games that would stimulate small groups were introduced. Especially successful was an electric contact quiz game. Not only did it offer the interest of manipulating the device, but it served the purpose of bringing several of the girls together by having one girl ask the question and others offer answers. Those who did not wish to participate simply continued their handwork. Other games, such as parchesi, lotto, big business and monopoly, were introduced. The girls formed small groups. To have the entire group participate in some game was a rarity for weeks. A typical meeting found some girls working with clay, some painting or doing handcraft while others played games, particularly of the table variety. In spite of the varied activities, there was discussion and conversation between the members of the group.

After five months of these meetings the girls still sought the approval of the adults in the group, but there was noted an increasing desire for the members to make their own plans. This tendency was encouraged. The idea of having a party seemed to originate spontaneously. It was decided in a concerted fashion to plan a program that would be a surprise to the leaders. A committee was selected by the group to write and produce a play. Other committees were chosen to purchase food and prepare and serve refreshments. When the preparations were under way, Ann wanted to buy ten times the amount of food that would have been necessary. The desire was understandable to the leaders in view of her early emotional deprivations, but it was not made a subject for discussion. T leader found it necessary to take an active sup visory role in the buying. The program, ho ever, was entirely in the hands of the girls.

The play involved much killing and inhum characters such as zombies. These parts w taken by the girls who were the most hos members of the group. For instance, Sa seemed to gain some emotional release from p traying the role of the killer. Rhea was plea to be the punished person and realistically pla the part of the corpse. Some of the girls seem to gain vicarious pleasure from the performa although they could take no part in the acti while others, like Gerda, were not sufficien free to express any reaction. No attempts w made to interpret to the group the meaning the portrayals in the light of the personalities backgrounds of the girls. The material understood by the leaders, as it had been cussed in conference.

It was interesting to note how the vari activities of the girls reflected the emotio conflicts with which they were struggling. example, Rhea was always extremely disturb in any games involving money, such as monopo This anxiety was merely a duplication of experience she had with actual money. It flected clearly the type of life Rhea was oblig to live. She lived with a stepmother who h been separated from her father after a lo period of disagreement. Rhea's father ne sent any money for the support of her or of wife but gave it grudgingly when Rhea went beg for it. The leaders did not deal with t problem directly. Information, no matter h pertinent, that had been obtained from case wo ers and not from the girls themselves was used. Only information that arose out of group itself was utilized. A suitable openi for Rhea to discuss the subject was plann

Ann similarly indicated her inward feelin while she played parchesi. She continua reached "home" before she had completed preliminary steps. This mistake was repea several times. The members of the group beca impatient and insisted that she follow the ru The reason for this behavior was apparent to leader because she had discussed the subject a recent placement in a foster home with girl. When the tension between Ann's anxi and the group's impatience mounted, the lea sought her out for individual attention. W the leader commented that she appeared c fused about the placement in a foster home, A grasped the opportunity to discuss the ma further. She was given an appointment w

e leader at her office in the psychiatric clinic. he interview was held at a time when there as a change of workers at the placement agency d was given with their complete cooperation. By this time some group feeling had developed d some of the girls felt free enough to bring for general discussion problems facing adoles- nt girls, for example, insecurity with boys and th groups, "going steady," dates and make-up. It was after a discussion of petting that Judith owed some indication that she wanted indi- dual help. She had been manipulating clay for veral weeks without producing anything. That e was gaining some satisfaction from the mere anipulation of the material cannot be denied. he clay seemed to be used also as a tool to duce tension while she discussed her own prob- ms. Her early history of difficult toilet training emed to bear a direct relation to her present oblems. The manner in which she used the aterial to gain contact with the leader, however, as interesting. She picked up a piece of clay, gan to talk to the leader and gradually edged the far end of the room, subtly inviting the ader to follow. Judith utilized this opportunity discuss the question of petting on a more rsonal basis with the leader. For three meet- gs the leader spent part of the time following rough some of the problems Judith wished to scuss. To all the other members of the group appeared that she was merely getting some sistance with the work at hand. It was not til Judith had settled some of the questions at had been troubling her that she was able produce the article she had been making, an htray.

After six months of weekly meetings the girls mpletely discarded crafts in favor of social tivities. As it was drawing close to the end the school term, plans for the summer became general subject of discussion. Shirley sug- sted that it would be fun if the whole group nt to camp together. The idea took root im- ediately, and engendered general enthusiasm. his suggestion led to others about hikes, picnics d parties. The idea of going to camp finally sulted in a two week camping experience on a all ranch. All but two of the girls stayed for e full two weeks; Sarah and Rhea joined the oup for the last week.

The camp offered an added opportunity for e growth of group feeling. Although some of e girls had previously been to camp, this situa- n offered a decidedly unique experience in oup living. It had been planned that one of e leaders go with the girls as a counselor. As is did not work out, a new leader joined the group for four days. She was specially qualified for this sort of work. The recreational therapeu- tist was also able to join the group for four days. This afforded the camp counselor an opportunity to talk over her problems in handling the girls in the group, and the visiting leader was able to participate in the experience. It also enabled the leader to observe at first hand the girls' adjustment in the new setting.

After the girls came back from camp, they wanted to organize a club. The differences in the tempo of development of the members made the election of officers interesting, since those who had moved more rapidly took their rightful places as leaders of the group. The entire elec- tion was in the hands of the girls, and the ballot- ing was secret. It was not surprising that Sarah was chosen as president and that other officers were chosen according to ability and popularity. Rhea became vice president, while Mildred, one of the least aggressive girls, became a capable secretary. Jane was elected treasurer. Ann showed her resentment by not returning the following week. Sarah discussed this situation with the group, and the girls confessed that Ann was defeated because she was disliked. The leaders utilized this opportunity to offer to the group some interpretation of Ann's behavior and of their reactions to her.

During the following meetings there seemed to be an entirely different atmosphere from that which had been evident a few months pre- viously. Whereas the general attitude had for- merly seemed to be that of each girl grasping some pleasure or satisfaction for herself, it was now thoroughly cooperative. The girls decided to call themselves the Friendship Club. They chose brown and green as their colors. Several meetings were spent in redecorating the room and painting the furniture. Rhea and Sarah drew pictures and mottos for the walls. Several of the girls volunteered to repair the furniture. When they completed their work, they had trans- formed their formerly colorless surroundings; the room was now attractive.

It was suggested by Sarah that the club have an open meeting to which outsiders could be invited. Mildred asked if by outsiders she meant boys. A final decision was made to bring boys at a later date. Preparations for this meeting were made. Committees were again selected by the girls to assume complete responsibility for the plans, but they asked if they might consult the leaders. When the meeting took place, Sarah unexpectedly brought 2 boys. Surprisingly, all the girls accepted the visitors with poise. The boys were completely at ease and joined in the

fun. The mutual competition for the attention of the boys appeared friendly and gay. Only Mildred objected to singing and telling stories in the presence of boys. She was told she need not participate; however, when the time came for her part in the program, she carried it off triumphantly. Not only was this behavior in sharp contrast to her former meek and inarticulate manner, but her personal appearance was noticeably changed. She was clean and neat, although poorly dressed; also she wore heavy make-up. Her eyebrows were plucked; her nails, formerly bitten, were long and brightly colored. Her hair was elaborately curled to emphasize the dramatic change.

At this meeting 2 new members were voted into the group. One was a somewhat disturbed girl referred for membership by the Jewish Community Center. This girl had applied for membership about five months before and had been turned down by the girls. They rejected her vehemently because she was "boy-crazy." The fact that they accepted her membership at this time is an indication of the growth of the group. The other new member was a friend of Ann's.

The leaders felt that the girls were functioning as a normal group and were ready for the leadership of a recreational worker. Prior to our final decision to transfer the group, the same leader who had given the recreational interview again saw each girl in order to determine the present status of her social adjustment. Every girl now had a membership in the Jewish Community Center (three girls had been members before). All but 2 girls had several extracurricular activities at school. In addition, many of the girls were attending parties, often together. Most of the members of the group were attending dances with boys, and some had begun to double date. When the girls began to demand more evening activities and outings, we felt that it was the psychologic moment to approach them regarding the transfer of the group to a recreational worker. Although the possibility of the shift had been under discussion for some time, the last meeting was interesting. The girls indicated awareness that this had been a special project. One of the girls expressed the hope that the new leader would understand them as they felt they had been understood in this group.

The leaders discussed with the girls the progress made by the group during eight months. They themselves felt that they were ready for the next step. The president called the leader a week later to say that they had been successful in securing a leader. They were planning a party and wanted the former leaders to attend.

The progress of the girls may best be summarized by briefly describing the courses of development of 2 girls, one representing ability to utilize the group as a therapeutic agent and the other inability to move without the combined individual-group approach.

CORINNE.—At first Corinne gave the impression of being a "little old lady," in both attitude and in behavior. She was prim, meticulous, without humor and extremely compulsive. She finished all the projects started by the group, did a perfect job of each thing measured accurately, worked carefully and cleaned up thoroughly after each meeting. Her behavior followed this pattern for the first five months. Her ability to learn quickly and to do good work was utilized to help her relate to the other girls. She became assistant to the craft leader and willingly aided those who needed special help. She was overly conscious of dirt and disorder and on one occasion spent an unhappy afternoon because she got a small spot on her slacks—slacks that she wore under pressure from the group. She had resisted adamantly at first when the group suggested wearing slacks or shorts on a picnic. She objected to doing anything that she believed to be not strictly feminine. She never mentioned boys, and she blushed furiously when the subject was brought up by other members of the group. During discussions of the subject Corinne concentrated intently on her craft as if completely divorced from what was going on. She could not join in group singing and looked uncomfortable during all group performances. These performances were original with the group and perhaps did not meet Corinne's standards of "good." Also, she was not sufficiently free to join in such activity. Any group discussion or cooperative endeavor frightened her. It seemed to us that she overcame this anxiety by watching the interaction between adults and the group. She eventually became good friends with one of the shyer girls; she was well liked by all the members of the group but never became closely associated with any of the others.

Soon much of her excessive primness began to fall away; she moved freely about the room, laughed and talked with the girls and joined in group games. Her appearance became that of an adolescent girl rather than that of a child. Moderate make-up appeared, and she chattered about clothes and hair-do's. She began to walk home with some of the girls and to plan outside activities with one or two.

Corinne's development can best be illustrated by the following incidents. After about eight months the girls decided to repaint the furniture. Corinne lent suggestions as to color and surprised every one by putting on an old shirt, sitting on the floor and painting with apparent enjoyment. Spilling a little paint on herself was unavoidable, but she took the disaster with ease. She simply asked the leader how to get the paint off and continued with the job. About this time Corinne's mother dropped by to thank one of the leaders for the assistance given the girl. She described an entirely different Corinne. She said that the girl was happy and carefree, sang around the house, entertained friends at home and went to other homes in the neighborhood. Formerly when her father teased her about boys she blushed and left the room in anger; now she smiled and replied, "Which one do you mean, Harry, Pete or Fred?"

Corinne joined a badminton class at school and took lessons in dancing at the Jewish Community Center

here she was now a member. There were several conences between the case worker and the leaders of the oup. An important factor in assisting this girl was intensive, excellent work with the parents, especially th the mother. She was not only helped to greater edom herself but was prepared to accept the changes Corinne.

Particularly for this girl crafts were an imrtant tool, not only in helping her through nse situations but in drawing her out and offerg her ego-satisfaction. Also, the permissive titude on the part of the adults and the freedom the members of the group offered her an perience unlike that in her home prior to the ork with the mother. The ability of other girls discuss adolescent problems openly and their terest in their personal appearance provided centives to be more like them.

EVELYN.—Evelyn entered the group late. She found difficult to take a deciding step. All of her behavior owed insecurity. She was aloof, gave the girls the pression of being stuck-up, verbally deprecated all of eir activities and refused to participate. She clung to ults and was ingratiating; but she continued to come the meetings of the group. She gave the impression being dull and stupid, although previous testing indited that her intelligence quotient was at least 100. games involving money (monopoly) she experienced ch emotional blocking. She could neither give up at she had nor bargain for more. She could conceive ly of $10, not $1,000. For instance, when she was fered a generous price for her holdings she always isted on receiving $10 more. She could not add or btract the simplest sum, nor could she participate in mple games. It was only after a long period of teachg by an adult that she was able to take part in a me like lotto.

Because of her apparent stupidity most of the girls enly made fun of her, calling her "dumb," maliciously paying her for her snubbing attitude. After about ur months as a member of the group, she attended Jewish Community Center picnic, at which she was mpletely ignored by the other girls. According to the der she finally related herself to much younger chilen. She refused to join the next outing.

In crafts Evelyn was fearful, and she could not be awn into participation. Finally, after long observation d when a friendly attitude toward the leader had veloped, she agreed to start something. She selected leather belt that required only mechanical putting gether and no ingenuity or imagination. The leader couraged this project, feeling that it held no possiity of failure, only achievement and satisfaction.

The leaders were aware that before Evelyn could hieve an adjustment within the group individual assisnce would be necessary. After group discussions of mmon adolescent problems, the girls were advised that ey were welcome to come to the office for further scussion. Evelyn was finally brave enough to come th another girl. She asked to see the leader but was idently too frightened to face her across the desk and t without an interview. A week later she returned d was able for the first time to discuss the problems at had caused her anxiety for many years. Two of r greatest problems were her father's mental illness, cluding the possible hereditary aspects of it, and her confusion regarding sex. During the individual interview she seemed to gain some release; she looked brighter, appeared happier and expressed a desire to return. Unfortunately it was necessary for Evelyn to leave for camp the following week.

It is interesting that for the first time she was able to make a good adjustment at camp. Although she had been unable to do so before, she now identified herself sufficiently with the girls to participate in their activities. She began to pay a good deal of attention to her appearance, arranged her hair in various styles, joined in hikes and games and made several articles in the craft class. There were periods when she enjoyed being alone and would go off by herself, reading a book or just daydreaming, but she did not appear unhappy. She mentioned several times, "It is good to get away from the city and not see the newspapers and just be away from it all." Her attitude was so changed that the girls accepted her, and she became popular with the entire camp.

After returning from camp Evelyn did not return to the group or the office. There is a possibility that she felt guilty about the information she had given in her individual interview. She was therefore mailed an appointment for an office interview. She came, and she looked lovely, with well applied make-up and attractive clothes. She talked enthusiastically of a birthday party she had attended and other social activities. She did not wish to return to the group because she was now 16 and felt too grown up to associate with the girls. Evelyn was really more mature physically and in her attitudes. We felt that this was a realistic objection with which we agreed, and we did not urge her return.

During this interview and the following one Evelyn continued to talk of her problems. She sought assistance with vocational planning and it was thought advisable to refer her to the worker at the Jewish Family Service Agency. Evelyn felt that she would be able to talk to the worker and indicated no traces of insecurity in the transfer. It has since been learned that she was referred to the Jewish Vocational Guidance Bureau; she kept her appointment and responded well to the service. She was also seeing the worker at the Jewish Family Service Agency in her office.

Without the group setting it is doubtful whether this girl could have been reached in a formal office interview. In the group she could observe adults and their attitude toward other girls and their interest in helping them with their problems. Her difficulties were of such a nature that release from inner tension through individual help was necessary in order to free her toward a better adjustment. It is possible that the individual interview kept her from returning to the group, but it must be kept in mind that our major interest was in assisting the individual girl rather than in building the group.

Summary of Results.—At the conclusion of the experiment the results were summarized. Eleven neurotic adolescent girls had been treated for eight months or less. These girls had all shown social maladjustment plus other neurotic manifestations. They were predominantly shy and withdrawn. It was definitely agreed that

8 of the 11 girls had made such rapid strides in emotional development that they could no longer be considered to have personality problems. The other 3 girls were only partially helped. Hannah had so many deep-seated problems that it is a wonder that she was helped at all. Her home conditions were still a source of irritation, but her relations outside the home were decidedly improved. Rachel did not seem to have been reached by the leaders or the group. The family case work was only superficial, as it was not found acceptable. Corinne made some progress, but at the conclusion of the experiment it was felt that she could have profited by further group psychotherapy. All the other girls were essentially normal adolescents with poise and outgoing manners and with no neurotic symptoms. The 2 girls who joined the group after the project was under way were not included in this report.

COMMENT

The foregoing description of the high lights of an experiment in the treatment of a group of mildly neurotic adolescent girls furnishes excellent material for a discussion of group psychotherapy. There was unquestionably a wealth of material that was not observed or recorded that could have furnished the basis for added interpretation. It was our purpose, however, to bring into relief the most noteworthy features of the progress of the group, with omission of many trivia which might only becloud the major issues.

There are many reasons why it was decided to perform the experiment with a homogeneous group. It is known by experienced group workers that in groups in which there is a wide range in age or a great difference in intelligence and interests there is apt to be a great deal of confusion. One of the reasons for homogeneous grouping is that large discrepancies in ages reactivate natural sibling rivalries.

From the descriptions of the girls it can be seen that all of them were suffering from anxiety states of various degrees. The inability to form social contacts with contemporaries was an expression of chronic fear tensions which had been the aftermath of disturbances in the sphere of interpersonal relationships within the family. Instead of defending themselves against anxiety exclusively by the formation of symptoms, the girls shied away from people most of the time.

It has been the general experience of persons who have worked with young adolescents that there is resistance to the establishment of a working relationship with an adult of the opposite sex. This is not necessarily true in intensive psychotherapy with extremely disturbed young sters. But by and large it can be noted that when the physiologic changes of puberty are ahead of the psychosexual development, the complication of parent-child relationships and the stirring of heterosexuality at the same time may prove too burdensome. For this reason leaders for groups of adolescents should be of the same sex as the members of the group. In addition to the fact that when there is a leader of the same sex the likelihood of stirring up feelings of sexual guilt is more remote, there is the factor of identification. Of this more will be said later.

The fact that the girls came in for personal interviews after some preparation indicated that even though they were fearful, they were definitely motivated in the direction of emotional maturity. Yet the manner in which they entered the group suggests the formation of a class at the nursery school level of emotional development. Figuratively they had to be led by the hand by their mothers. In this instance the leader who interviewed them took on a maternal role. The one or two times that these girls were seen before the first meeting served to establish a feeling of support between child and leader which afforded a measure of security in a "well-at-least-my-mamma-will-be-with-me" manner. The maternal role vested in the leader suggests the similar role assumed by the therapeutist during some phases of individual psychotherapy.

It can be noted from the description of the first three meetings that there was no communication between members of the group. The only interest was in the objects absorbing the work energies and in the leaders. In freudian terms, libidinal object cathexes were centered on things and on the parental figure. The leader-child relationship suggests the early mother-child bond, where the intense preoccupation with crafts suggests the interest in things rather than people that is usually demonstrated during the so-called latency period.

Actually the leader-child relationship represents not merely the infantile child-mother relationship, but rather the beginning of the reversion of the oedipal ties of the child from the parent of the opposite sex to the parent of the same sex. This reversion is accomplished through the medium of identification in the normal family set-up. In the girls of our group there were delays in the orderly sequence of psychosexual growth; they had not formed normal identifications because of disturbances in their home settings. They were striving to come to terms with their formerly hated mother per-

s but were inhibited by their own turmoil. at these hostile feelings were present could gleaned from the negative reactions expressed the leaders after the girls felt free enough release their true feelings. In the early stages, vever, they were too fearful to express any lings but sought refuge in an exaggerated rest in material objects.

The interest in objects fulfilled the dual pure of giving opportunity for the use of various aningful mediums of expression and serving the connecting link between the girls and the lers. By this means the girls could obtain ntion and praise from the adults. At the same e it was apparent from the start that each was acutely aware of the other girls. Work ivities, however, served to preoccupy them the extent that conversation and other social tacts could be avoided. On the other hand, re was afforded the opportunity for each ividual girl to lose herself in the group situan and thereby to gain a measure of security. e feeling of security operated directly against forces that produced the feelings of anxiety m which these girls were suffering.

Because of the inadequacy of the ego developnt of each of these girls, they were able to satisfaction in the idealized ego vested in leader and in that way incorporate sufficient rgy to bolster their own egos. This is another of describing the growing feeling of security t was acquired out of identification with the der. There was probably another process of ntification, that of the girls with each other. hen the original desire that each of the girls ght have had for the attention of the leader s replaced by mutual identification with each er's needs, there then became manifest the t evidences of group feeling. This is the in reason that group therapy is best performed h a homogeneous group. When all of the mbers are of the same sex and are near each er's own age, there is a greater opportunity each person to project himself or herself the role of the other persons in the group. Freud makes the statement that a group is d together by the medium of love and that up actions are performed because the indiuals prefer to be in harmony rather than in position in order to avoid the loss of love. e growth of manifestations of love, which y have represented unconscious homosexual vings, was noted when the girls found mutual erests. This shifting of libidinal ties from jects and parents to people like oneself repreits growth from the narcissistic level to a re mature form of object cathexis.

Ego strength springs from all these forces of identification. When the power to identify with others is disturbed, there is interference with normal group formation. Lander [32] showed how delinquent adolescents failed to form social adjustments. He stated that as long as a person views the family and community as being hostile and frustrating he cannot possibly identify himself with others to the extent of submerging his own personal needs to the needs of the larger group. The girls in our group did not as a general rule demonstrate this type of aggressiveness but instead withdrew as if reacting to an unknown danger. When they began to feel less threatened by contact with other human beings, they were able to reach out for more secure satisfactions.

As the girls began to experience interpersonal contacts within the group, the omnipotence formerly vested in the leader began to be questioned. They made their own suggestions about crafts and used the leaders as resources rather than authorities. This feeling was exactly in cadence with the parallel emancipation from parental ties. The girls who could not thoroughly work through these feelings were so severely bound to parental figures by their ambivalence that group work was insufficient to meet their needs.

Case work with the families of the girls served in many instances to break up the vicious cycles of hostility provoking anxiety and vice versa, so that identifications could progress more expediently. In spite of all these efforts, movement was slow. After twenty weekly meetings the girls were still miles apart. It is interesting, however, that the girls kept coming. No doubt they were getting some satisfaction, although it was only slightly discernible from the surface.

When the interest shifted from individual activities to games, a feeling of familiarity was already beginning. One must not lose sight of the importance of the consistency of the setting which inspired the feeling of being at home. The same place, the same hour, the same girls, the same leaders week after week instilled a feeling of security in disturbed persons whose lives were so full of conflicts and inconsistencies as to be rendered socially paralytic. When the girls attained some security, they were able to express some of their repressed emotions.

The playlet that they put on certainly lifted the lid from the encased fantasy lives of the girls. No doubt every character represented something within each of the girls. Through

32. Lander, J.: The Pubertal Struggle Against the Instincts, Am. J. Orthopsychiat. **12**:456, 1942.

acting as a group, they were able to alleviate their feeling of guilt through the dilution of their individual thoughts with those of the others. Here again their only audience was composed of the leaders, from whom they sought approval and understanding. It was in essence a "psychodrama" spontaneously staged.

It is noteworthy that instinctively conditioned activity sought its own expression in due time. Even when there were manifestations forthcoming, the leaders did not make any group interpretations of the instinctive expressions. The meetings were always conducted on what can be considered the ego level. Even extremely meaningful ego interpretations were carefully guarded from general discussion. It is true that some group therapeutists are much bolder in their interpretations and hold open discussion of intimate material with the group as a whole. In this group of adolescents such activity on the part of the leaders might have proved disastrous.

It is true that in individual therapy there is a much wider range of permissibility than there is in any home situation. Nevertheless there is a limit beyond which the therapeutist does not permit his patient, whether adult or juvenile, to digress. It is the pattern of consistencies such as time limits and prohibitions against destroying fixed property or inflicting pain or discomfort on the therapeutist that gives the child a framework within which he can build up his ego. For this reason we cannot agree with those who allow a thoroughly permissive atmosphere in the group situation. The days of "everything goes" have fortunately disappeared from progressive education and should disappear from other areas as well. If the child must build a superego within his own restrictive influences, he is apt to be much more self condemnatory than if the adult sets the limits and speaks up when the bounds have been overreached. The limits were set at first by the leaders. Later, as group solidarity became manifest, the greatest part of the responsibility for discipline became the shared interest of the entire group. Actually, the subtle discipline exerted by disapproval by other members of the group became a strong socializing force. The feeling of a gradual process of weaning throughout the progress of the group can no doubt be sensed from reading the protocol.

Wilson [10] emphatically expressed her opinion that leaders of groups should not single out members for individual attention. It is her opinion that if special attention is needed by any member of a group it should be given by other case workers or psychiatrists. This may be true for the more superficial levels of grou work, especially when the leader has had training in the technics of rendering individu assistance. It was our feeling that individu interviews helped some of the girls in our grou Interviews served to bring the girls closer the leaders. Inasmuch as the appointments we made secretly, there was little likelihood that t individualized attention could precipitate anta onisms. The interviews were held at the ps chiatric clinic to establish a bridge which cou serve as a starting point for intensive treatme by a social worker or a psychiatrist, should the services meet the needs of the girls at any tim in the future. While the group was still in t process of crystallization, the individual inte views served the purpose of leveling off situatio in which individual members had the feeling th they were not receiving a sufficient degree attention or love from the leader. Obviousl in the group situation the leaders remained im partial and equally interested in all the girl but the emotional tone of leader and membe changed in the minds of the girls who felt th need for extra attention. Baruch [33] has similar found that "time alone" with the teacher help nursery school children form group contact more easily.

From the time the group began to functio as a unit, its growth proceeded almost entirel on its own power. There is little need to g into an elaborate discussion of the group proces the "group work process" or all the fanciful theories and diagrams worked out by psychologist about the forces which draw people to each othe to form groups and the way in which the grou mind functions.

We feel that little would have been gained the group had been subjected to elaborate psy chologic studies to determine by objective criter the status of interpersonal relationships. might have been interesting from the academ point of view to have drawn up "sociograms as described by Moreno [25] or to have expresse the interactions of the members of the grou in the mathematical formulas described b Lewin [34] and his associates. Our object wa not primarily directed toward describing huma behavior but was concentrated on redirecti disturbed relationship in a healthy direction.

33. Baruch, D. W.: Incorporation of Therapeu Procedures as Part of the Educative Process, Am. Orthopsychiat. **12**:659, 1942.

34. Lewin, K. L.; Lippit, R., and Escalona, S. K. Studies in Topological and Vector Psychology, Studi in Child Welfare, Iowa City, University of Iowa, 19 vol. 16, p. 3.

Our interest centered around the clinical observation that there was established a feeling of group loyalty and morale operating in a social unit, whereas at the beginning there were merely 11 strange, frightened adolescent girls. That all of the girls did not profit equally from the experience does not necessarily discredit the whole experiment. Certainly no harm was done to them and probably some good. Although they may not have contributed a great deal to the growth of group feeling, they did not materially hold back the other girls, whose emotional growth proceeded unchecked.

No doubt the greatest single factor in the relaxation of these girls with each other was the feeling of mutual acceptance. The leaders accepted the members and the members accepted each other. This acceptance satisfied the basic narcissistic impulses to a degree which helped the girls to move on to later stages of psychosexual maturation. Freud says that love changes people from egotists to altruists. Manifestly the girls not only evidenced altruistic feelings toward each other but later permitted themselves to think in terms of members of the opposite sex because some of their emotional barriers were dissolved.

MANAGEMENT AND PROGNOSIS OF MEGACOLON (HIRSCHSPRUNG'S DISEASE)

REVIEW OF TWENTY-FOUR CASES

K. S. GRIMSON, M.D.; H. N. VANDEGRIFT, M.D., AND H. M. DRATZ, M.D.
DURHAM, N. C.

Patients with megacolon (Hirschsprung's disease) present difficult problems of management and prognosis. Diet, enemas, laxatives and parasympathomimetic drugs have been the major medical aids. Surgical intervention, when employed, has usually consisted of colostomy, resection of the colon, sympathectomy or emergency correction of a volvulus or perforation. The medical literature is extensive and will not be reviewed. The surgical literature has been reviewed by us in a report dealing with the surgical treatment of obstinate megacolon.[1] The conclusions based on this review are that protracted medical management of obstinate megacolon carries a high mortality, that segmental resection of the colon carries some risk and may be followed by recurrence and that sympathectomy does not alter significantly the gross pathologic condition. Sympathectomy apparently facilitates medical management and, at the same time, decreases or interrupts the impulses over the pathways for visceral pain, which give early warning of impaction, pressure necrosis or volvulus. Reports of the occurrence of such pathologic conditions after sympathectomy are multiplying. Factors that may aid in selecting medical management, sympathectomy or resection of the colon for patients with megacolon will be discussed.

The causation of megacolon has not been definitely established. The gross and microscopic abnormalities encountered have been variously described. Reports dealing with the relative incidence of involvement of a portion or of all of the colon and rectum have differed. Megacolon is a relatively rare disease. The limited number of patients studied by any one observer and the difficulties encountered in following patients for long periods make accurate observation difficult. The authors therefore feel warranted in presenting this study of a series of cases and in making suggestions, based on the pathologic types encountered, that may help in prognosis and treatment.

The records of all patients with megacolon seen since the opening of Duke clinic, in 1930, have been reviewed, and the present status of the patients has been determined by correspondence and by return visits. There were 24 patients for whom the diagnosis was thoroughly established. The initial observations indicate three rather distinct types of involvement of the colon, and events occurring during the period of observation and later, as determined by the follow-up studies, warrant classification of the 24 patients into three groups. The first group included 12 patients with uniform and occasionally immense enlargement of the entire colon with definitely and at times also immense enlargement of the rectum. The second group included 7 patients with uniform and usually immense enlargement of the entire proximal portion of the colon ending distally, usually in the sigmoid region, with a normal segment of colon and a normal rectum. This condition presents the most serious problem in management. Four patients in group 2 treated conservatively died. Three treated by a one stage resection of the megacolon with iliosigmoidostomy are living. The third group included 5 patients with enormous enlargement of the sigmoid flexure and the descending colon, with or without some degree of involvement of the proximal portion of the colon and of the rectum. This condition is classically separate from the others and has been described in the literature as anal achalasia. The histories of patients in these three groups are presented, arranged in each group in the order of the ages of the patients when first examined.

The symptoms that seem to indicate a favorable prognosis and those that are associated with a serious risk and may indicate surgical intervention are discussed in the summary. Rectal and proctoscopic examinations and repeated roentgen studies to determine whether the lower portions of the sigmoid colon and the

From the Department of Surgery and the Department of Pediatrics, Duke University School of Medicine.

1. Grimson, K. S.; Vandegrift, H. N., and Dratz, H. M.: Surgery in Obstinate Megacolon: Radical One-Stage Resection and Ileosigmoidostomy, Surg., Gynec. & Obst., to be published.

ctum are normal or are involved in the dila-tion are of value for both prognosis and anagement.

STORIES OF TWELVE PATIENTS WITH UNIFORM ENLARGEMENT OF THE ENTIRE COLON AND DILATED OR EASILY DILATABLE RECTUMS (GROUP 1)

CASE 1.—S. M., a Negro girl who is 21 months old at e time of this report, was admitted to the clinic at e age of 18 months. She had received dietetic treat-ent, enemas and mild cathartics from birth. Defeca-on was obtained by a great deal of straining and never curred spontaneously. Three or four days frequently ssed between movements. The abdomen was normally oderately enlarged but would occasionally distend eatly. Examination at the time of her admission to the inic revealed a moderately enlarged, soft abdomen con-ining palpable, thickened, redundant loops of colon. igital and proctoscopic examination after evacuation the colon revealed enlargement of the rectum and of e lower portion of the sigmoid flexure. Roentgen xamination after an enema of barium sulfate suspension emonstrated moderate uniform enlargement of the tire colon. The upper portion of the sigmoid flexure of e colon was redundant, and the lower portion and the ctum were dilated. Management by the use of enemas, agnesia magma, liquid petrolatum and neostigmine romide has been effective in controlling obstipation and eventing attacks of distention during three months of bservation. The colon and rectum of this patient are iformly enlarged, and medical management has been fective. Hospitalization has not been required.

CASE 2.—H. K., a poorly nourished white boy who as 6 years old at the time of this report, was first dmitted to the clinic when he was 19 months old, imarily because of thrush of five days' duration. This ndition responded readily to treatment. Obstipation nd gradually increasing abdominal distention had been esent since birth. Enemas and laxatives were con-antly employed. The mother stated that frequently rge hard masses had been present in the abdomen nd peristaltic waves had been visible. Examination at e time of admission revealed a protuberant abdomen. he rectum was large and atonic. Roentgen examina-on after an enema of barium sulfate revealed con-derable dilatation of the entire colon and rectum. ecompression and daily defecations were accomplished uring ten days that the patient was in the hospital y dietary treatment and by the use of liquid petro-tum, deproteinated pancreatic extract and daily enemas. he patient was discharged with a medical program mploying deproteinated pancreatic extract, liquid etrolatum and daily enemas. Six weeks later he was rought to the clinic with the abdomen again con-derably distended. Defecation was achieved only by e daily use of enemas. Hospitalization was advised nd refused.

Inquiry four years later has revealed that the boy is ving and well. Defecation has been regular, and the bdomen has been almost normal in size. This patient ith a megacolon that definitely extended through the ctum had only moderately severe symptoms, and ese have subsided during the last four years. The rognosis is presumably favorable, largely because of e uniform enlargement of the colon and rectum.

CASE 3.—W. C., a white boy who was admitted to e clinic at the age of 2 years and whose age at the me of this report is 6 years had increasing constipation during the first eight months of life and received occasional enemas and suppositories. Constipation then became more severe, although occasionally brief intervals occurred during which elimination was normal. Vomiting developed during periods of severe constipation. Enemas, suppositories, an emulsion of agar in liquid petrolatum, cascara sagrada, magnesia magma and stronger cathartics had been employed. At the time the patient was admitted to the clinic the abdomen was protuberant and the rectum dilated. Roentgen examination after an enema of barium sulfate revealed moderate enlargement of the entire colon and rectum. The sigmoid segment was slightly larger than the remainder of the bowel. Diet, training in habits of defecation and the use of deproteinized pancreatic extract, liquid petrolatum and enemas were advised. Correspondence four years later has revealed that there has been considerable improvement in the condition of the patient. One serious episode of distention of the colon occurred when the boy was 4 years old. The easy outlet furnished the enlarged colon by the enlarged rectum may have facilitated the remission of symptoms.

CASE 4.—D. W., a Negro girl who is 10 years old at the time of this report, was admitted to the clinic seven

Fig. 1 (case 4).—Roentgenogram showing moderate enlargement of the entire colon and the rectum of a 4½ year old girl. Obstipation subsided spontaneously two years later and has not recurred.

years ago. Constipation had first been noticed after an episode of diarrhea that occurred when the patient was 6 months old. Laxatives had since been necessary. The abdomen became distended if defecation was not achieved during five days. Examination at the time the patient was admitted revealed a flat abdomen and an apparently normal rectum. Roentgen examination after an enema of barium sulfate revealed enlargement of the entire colon and rectum. Peristaltic efforts were sluggish. Proctoscopic examination to a distance of 7 cm. revealed no essential abnormality. The use of an emulsion of agar in liquid petrolatum, deproteinized pancreatic extract and a diet was recommended.

Eighteen months later the patient returned and was hospitalized for eight days. Obstipation had become more severe. Periods of five or six days would lapse without defecation. The obstipation was associated with

abdominal pain, nausea and vomiting. The abdomen at this time was protuberant. By roentgen examination the colon was seen to be somewhat more enlarged. A spinal anesthetic did not alter its activity. The rectum appeared dilated (fig. 1). Evacuation was accomplished by the repeated use of enemas. Proctoscopic examination to a distance of 8 inches (20 cm.) again revealed no abnormality. Additional dietary measures, enemas and laxatives were advised. A sympathectomy was considered but was not performed. Inquiry six years later has revealed that obstipation gave difficulty for two more years and then subsided. The patient is attending school regularly, and medical attention is not required.

The history of this patient demonstrates spontaneous remission, when the patient was 7 years old, of symptoms produced by a moderately large megacolon. Two roentgen examinations made before the patient was 5 years old demonstrated involvement of the rectum. The rectal enlargement was overlooked during proctoscopic examination. It seems probable that the enlargement of the lower part of the colon and the rectum to the anus facilitated evacuation and accounted for the remission of symptoms.

CASE 5.—E. J., a white boy admitted to the clinic at the age of 3 years, whose age at the time of this report is 11 years, had been constipated since birth. Early dietary management did not prevent straining and the elimination of extremely hard stools. Constipation progressed until during the last year before the patient was admitted to the clinic masses of fecal material had been observed all along the course of the colon. Seven days occasionally lapsed between evacuations. Daily administration of liquid petrolatum and weekly enemas had been employed. At the time the patient was admitted the abdomen was not obviously enlarged. However, fragments of hard stool could be palpated along the length of the colon. Roentgen examination after rectal and oral administration of barium sulfate revealed that the colon was uniformly involved (fig. 2). The rectum was larger than any other segment of bowel. During six days' hospitalization the colon was cleaned out by enemas. The child was discharged with instructions that careful training, diet, liquid petrolatum and occasional enemas be employed. Inquiry eight years later has revealed that he is alive and well. Spontaneous defecation occurs daily. The abdomen is not enlarged. The history of this patient also illustrates the ease with which a megacolon emptying through an enlarged rectum may be managed.

Fig. 2 (case 5).—Uniform enlargement of the entire colon and the rectum of a 3 year old boy, demonstrated by oral and rectal administration of barium sulfate. Obstipation later subsided. The patient at the age of 11 years has spontaneous defecation.

CASE 6.—S. McE., a white boy who is 6 years old at the time of this report, was admitted to the clinic at the age of 3½ years. The first intestinal evacuation was obtained on the tenth day of life by the use of enemas and castor oil. Liquid petrolatum, cascara sagrada enemas and drastic cathartics have been constantly required. Ten to fourteen days passed between intestinal evacuations. Abdominal distention and pain developed during these intervals. Normal defecation had never occurred. Examination revealed moderate distention and roentgen studies revealed that the colon was sluggish and uniformly enlarged. The dilatation included the entire sigmoid region and the rectum. The rectal dilatation was overlooked during a rectal examination. A regimen of laxatives and enemas supplemented by mecholyl bromide was advised. A follow-up examination has revealed that the boy improved for two years. Recently medical treatment was abandoned except for the use of occasional doses of liquid petrolatum. Three attacks of severe abdominal pain with distention and vomiting occurred. Rectal examination during the return visit demonstrated definite enlargement. Two quarts of barium sulfate suspension were required to fill the colon. Roentgen examination revealed moderate enlargement of the ascending transverse and descending segments of the colon, with definite involvement of the entire length of the sigmoid flexure and the rectum.

CASE 7.—H. A., a well nourished white boy whose age at the time of this report is 17 years, was first examined at the clinic eleven years ago. Abdominal

Fig. 3 (case 7).—Enlargement of the entire colon and the rectum in a 6 year old patient, demonstrated by a postevacuation roentgenogram taken after the patient had had an enema of barium sulfate. Symptoms subsided after a sympathectomy. The patient is living and well at the age of 17.

istention, severe constipation and vomiting began uring the first week and continued during the first ear of life. When the patient was 1 year old, the isodes of distention became periodic and could be lieved by the use of repeated enemas and castor oil. eavy doses of liquid petrolatum later extended the tervals between attacks to four to six weeks. Shortly fore the patient was admitted to the clinic, the attacks came more severe. Examination revealed a distended bdomen. Massive peristaltic movements of the colon ere visible. Rectal examination revealed a large re-xed rectum without palpable stool. Roentgen exami-ation revealed enlargement and fecal impaction of the ntire colon, including the sigmoid flexure and the ectum (fig. 3). The patient was hospitalized for eight ays, and during that time the colon was partially vacuated. Enemas, liquid petrolatum and deproteinized ancreatic extract were prescribed. One year later he as readmitted for three days with the history that there ad been little improvement. The size of the abdomen nd the size of the colon and rectum as revealed by oentgen examination were somewhat greater than at he time of the previous admission. Episodes of bdominal pain and distention were recurring at intervals f two to three weeks. Inquiry ten years later has evealed that during the first two years after the last dmission to the clinic the child was desperately ill everal times. A sympathectomy was then performed t another hospital. The symptoms subsided, and the atient at 17 is tall, slim and athletic. In this case mega-olon with involvement of the sigmoid and rectum roduced serious trouble, which was apparently benefited y sympathectomy.

Case 8.—V. H., a white girl whose age at the time f this report is 11 years, was admitted to the clinic at

Fig. 4 (case 8).—Enlargement of the entire colon, ost pronounced in the redundant sigmoid region and n the rectum, in a 7 year old girl. Medical manage-ent has effected relief of symptoms during a four ear period of observation.

he age of 7 years. Constipation first developed in the atient one year after moderately severe colitis with lood and mucus in the stools. It was observed when he was 2½ years of age and slowly became more evere. Periods of constipation and increasing ab-ominal distention lasted one or two months. During the year preceding admission to the clinic the patient had normal intestinal evacuations every day for several weeks at a time, while at other times daily enemas were required. Three months before examination four weeks had passed without an intestinal evacuation. Severe abdominal pain developed. The symptoms were relieved by numerous enemas. Abdominal examination at the time the patient was admitted revealed no distention or palpable masses. The rectum was recorded as essentially normal. Roentgen examination revealed great distention of all portions of the colon. The rectum equaled in diameter the redundant sigmoid colon (fig. 4). Hospitalization was advised and refused. Medical management by the use of enemas, liquid petrolatum and diet was recommended.

A follow-up visit at the office four years later revealed that gradual improvement had occurred. Defecation occurred almost daily with the aid of liquid petrolatum taken orally and without the aid of enemas. The abdomen was somewhat full but not distended. Digital examination revealed a spacious, dilated rectum. Roentgen examination after an enema of barium sulfate revealed some enlargement of the entire colon with the greatest dilatation in the descending and sigmoid portions and in the rectum. This history also illustrates a favorable course in a patient with Hirschsprung's disease involving dilatation of the rectum.

Case 9.—S. S., a white girl whose age at the time of this report was 16 years, was admitted to the clinic at the age of 12 years with a history of obstipation since birth. Enemas and laxatives were required for each intestinal evacuation during the first year. Voluntary movements then occurred, and enemas were necessary only occasionally. When the patient was 10 years old, a severe fecal impaction developed. She was admitted to a local hospital, where the colon was cleaned out and a diagnosis of megacolon established. Examination in the clinic two years later revealed moderate abdominal protuberance. A large mass of fecal material filled the sigmoid colon and the dilated rectum. It was thoroughly cleaned out by enemas during three weeks' hospitalization. Proctoscopic examination revealed some dilatation of the rectum and tremendous dilatation of the lower part of the sigmoid colon. Roentgen examination after injection of the colon with air, revealed some dilatation of the rectum and more dilatation of the upper part of the colon. Intestinal movements were well controlled by routine medical management and the use of deproteinated pancreatic extract. The patient was discharged. A follow-up report four years later revealed that she is now well and married. Defecation occurs without medical attention. This patient's record again illustrates the relatively benign clinical course that may develop for a patient with megacolon involving the rectum.

Case 10.—J. W., a white man admitted to the clinic at the age of 20 years, died when he was 24. He had been moderately constipated since birth. Infrequent attacks of obstipation and moderate abdominal distention had occurred and had been relieved by medical means. The most severe attack began four weeks befor he was admitted to the clinic. Defecation had become infrequent, and the abdomen had gradually increased in size. Vomiting and abdominal pain had not developed. Saline laxatives and enemas were employed without success. When the patient was admitted, his abdomen was distended by a fecal impaction that occupied the pelvis and the left side of the abdomen, extending up under the left costal margin.

Rectal examination revealed a large rectum and a long, dilated, impacted loop of sigmoid colon. The ascending, transverse and descending colon were moderately enlarged. With the patient under general anesthesia, the rectal sphincter was dilated and 4¾ pounds (2 Kg.) of fecal material was dug out of or expressed from the lower portion of the impaction. Two days later retention enemas of oil, and oral administration of liquid petrolatum and castor oil caused a mass evacuation of most of the remainder of the impaction. Liquid petrolatum, castor oil and occasional enemas then achieved daily movements. Twelve days later a moderate amount of fecal material remained. At this time the left splanchnic nerve was divided and the upper three left lumbar sympathetic ganglions were removed. The patient withstood the operative procedure well and was discharged.

Two and a half years later the patient reported that he had improved. Occasionally the bowels failed to move until liquid petrolatum was taken. Severe impactions had not recurred. The patient had married and had one child. Eight months later he called his family physician, stating that an impaction had occurred and that abdominal pain had developed. The physician reported that the abdomen was rigid, the temperature elevated and the pulse rapid and weak. Two quarts (about 1,900 cc.) of hard fecal material was removed manually through the rectum. The patient did not respond to treatment and died within eighteen hours. Autopsy revealed dilatation and impaction of the entire colon and rectum with perforation and peritonitis. The ascending colon measured 6 inches (15 cm.) and the descending colon 10 inches (25 cm.) in diameter. This history exemplifies greatly increased involvement of the colon in a patient who had a dilated sigmoid and rectum. It is possible that the sympathectomy may have adversely influenced the course of the disease by interrupting pathways for visceral pain that might have warned the patient earlier of impending trouble.

Case 11.—M. S. was admitted to the clinic at the age of 20 years. The early history of the habits of defecation of this patient is obscure. An abscess in the right flank was drained when the patient was 11 years old. A few months later an exploratory laparotomy was performed and an angulation of an enlarged transverse colon was reduced. Constipation has since been severe and liquid petrolatum has been employed. A few months before admission the patient had adopted Christian Science. Twenty-four hours before his admission cramping abdominal pain and distention developed. Examination revealed a moderately distended abdomen. Colonic peristaltic waves were visible. There was no stool palpable in the rectum. Roentgen examination revealed a great deal of dilatation of all segments of the colon, and after an enema of barium sulfate it revealed an enlargement of the rectum and the lower part of the sigmoid colon. A complete obstruction was present in the sigmoid colon. Exploration revealed uniform dilatation and hypertrophy of the entire colon with redundancy of the ascending, transverse, descending and sigmoid segments. The lower portion of the sigmoid colon was involved in a volvulus that obstructed the colon but had not produced strangulation. The volvulus was reduced, and the appendix was removed. The patient had a satisfactory postoperative course and was discharged. A follow-up letter revealed that symptoms recurred three months later and were corrected by medical means. Although the history of the case is not complete, the evidence from its review indicates that a true megacolon existed and that the case sho be properly included in this group.

Case 12.—W. W., a white man who was admi to the clinic at the age of 59 years, does not remem the medical history of his infancy and childho Constipation necessitated frequent use of cathar before he was 15 years old. During college years intestinal habits became regular. For thirty ye constipation and mild abdominal discomfort had b treated with various laxatives, but the abdomen h not been distended, and vomiting had not occurr Five weeks before the patient was admitted to t clinic cramping abdominal pains developed and a dominal distention appeared. The distention increas and was not relieved by occasional defecation. Exam nation revealed an abdomen enlarged to approximat the size of a seven months pregnancy. Colonic pe stalsis was visible. Rectal examination revealed e largement of the rectum. Roentgen examinati revealed dilatation of the entire colon, and after a enema of barium sulfate it revealed a large rectum a an incomplete obstruction near the rectosigmoid regi that was interpreted as a twist or a volvulus (fig. 5

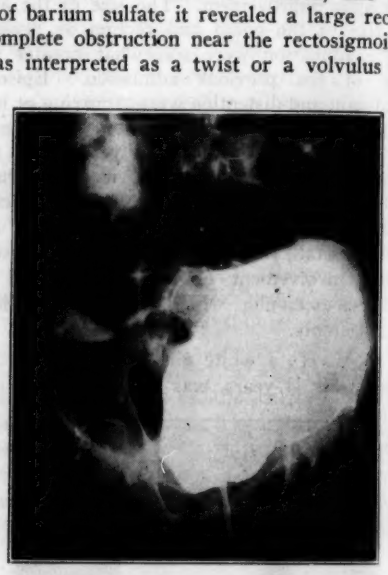

Fig. 5 (case 12).—Enlargement of the rectum and th lower portion of the sigmoid flexure and obstruction o the colon by volvulus in a 59 year old patient, demon strated by rectal administration of barium sulfate. Th megacolon produced mild symptoms before the ob struction developed.

A laparotomy was performed. The entire colon, includ ing all of the sigmoid region and the rectosigmoi junction, was enlarged to a diameter of 6 or 7 inches (15 to 18 cm.). The sigmoid colon itself was twisted in a half turn but not strangulated. The volvulus wa reduced. The postoperative course was uneventful Three months later the patient returned with a re currence of obstructive symptoms of nine days' duration with moderate abdominal distention. The rectum re mained large. Roentgen examination again showed dilatation of the entire colon and incomplete obstructio at the rectosigmoid junction. The abdomen was ex plored, and a recurrence of the partial volvulus of th sigmoid colon was observed. A long segment of th large, thick, redundant sigmoid flexure was resected and continuity was restored by a lateral anastomosis A proximal colostomy was established and later closed

This patient demonstrated uniform enlargement o the colon and rectum that gave minor symptoms unti

was 59. It is possible that impaction of the proximal ated segments will recur after the segmental re- tion of the colon and produce further trouble. section of all of the proximal colon and ileosig- idostomy would have obviated this risk, but it was bably not indicated because of the patient's age.

STORIES OF SEVEN PATIENTS WITH UNIFORM ENLARGEMENT OF THE PROXIMAL PORTION OF THE COLON TERMINATING USUALLY IN THE SIGMOID REGION IN A NORMAL SEGMENT OF THE LOWER PART OF THE COLON AND A NORMAL RECTUM (GROUP 2)

CASE 13.—J. H., a white boy, was admitted to the nic eight years ago, at the age of 10 months. He d at the age of 15 months. The history began with arrhea, with ten to twelve stools a day, immediately er birth; the condition persisted for three weeks. vere obstipation requiring the constant use of laxa- es or enemas then developed. Vomiting also occurred rsistently. A recurrence of diarrhea with blood in stools lasting one week had taken place just before patient was admitted to the clinic. At that time examination revealed a distended abdomen through ich peristalsis of the colon could be seen and large rd fecal masses palpated. The rectal sphincter was laxed, and the rectum was filled with large hard es. Roentgen examination later showed that the lon was enlarged tremendously to a point about 4 cm. ove the rectum. Evacuation was accomplished by eans of numerous enemas and laxatives. The child en retained all feedings and managed daily defecation ith the aid of medical treatment. Distention recurred, d the child died a few weeks after leaving the hos- tal. The dilatation and impaction in this patient tended downward only to the lower portion of the gmoid flexure. The normal segment of sigmoid and ectum beyond this point, although capable at times of lating during the passage of a fecal impaction, prob- ly facilitated the return of obstructive symptoms and ntributed to the early death. A colostomy or a section of the colon may have been indicated.

CASE 14.—W. W., a Negro boy, was admitted to the linic seven years ago at the age of 12 months. He ied at the age of 15 months. Obstipation had begun birth, and abdominal distention was noted by the ird day of life. Distention gradually progressed until e abdomen was hugely distended, with the skin over- ing it tightly stretched and thin. Constant and aried medical treatment was given without effect. omiting recurred frequently. When the patient was dmitted to the clinic, many colonic peristaltic waves ere visible. The circumference of the trunk at the mbilicus was 35 inches (89 cm.). The patient was oorly developed. There was moderate respiratory mbarrassment because of the abdominal distention. ectal examination did not reveal dilatation or fecal nasses. Roentgen examination revealed a gigantic colon with the cecum and the ascending, transverse and de- cending portions filled with feces. The rectum was f normal size. The lower portion of the sigmoid olon in several views appeared normal or only mod- rately dilated. There was extensive upward displace- ent of the diaphragm resulting in compression of the ungs and displacement of the heart transversely. The bdomen during the first week of medical treatment was reduced to a circumference of 20 inches (50 cm.). roctoscopic examination revealed no obstruction. One week later a left lumbar sympathectomy and splanchnic- ectomy were performed. Spontaneous defecation oc- curred in the hospital after the operation. Roentgen study revealed that the proximal portions of the colon were about one-half their original size but still greatly distended (fig. 6). The patient was discharged receiving dietary management supplemented by treatment with liquid petrolatum and occasionally with magnesium sulfate.

The parents brought the patient to the hospital one month later, stating that during the interval defecation had occurred every two or three days with the aid of liquid petrolatum and magnesium sulfate. The ab- dominal distention although variable was somewhat less than it had been before the sympathectomy. The patient had severe whooping cough. A roentgenogram revealed the colon to be tremendously enlarged and still outlined by barium given as an enema seven weeks earlier. The diaphragm remained greatly elevated by abdominal pressure. A diagnosis of pertussis was established, and the child at first responded to treat- ment in the hospital. Nineteen days after he was admitted, however, fulminating pneumonia developed and he died. Autopsy confirmed the diagnosis of

Fig. 6 (case 14).—Uniformly enlarged colon terminat- ing in a normal lower segment of sigmoid colon and rectum in a boy 13 months old. A sympathectomy performed thirteen days before the roentgenogram was made did not improve the condition. Death occurred fifty-three days later.

terminal pneumonia. At autopsy the colon was seen to be hypertrophied and distended to a maximum circumference of 7⅓ inches (18 cm.) from the cecum through the midportion of the sigmoid flexure. The lower portion of the sigmoid flexure and the rectum were normal.

The history of this case illustrates well the failure of medical management and sympathectomy to relieve obstipation and abdominal distention significantly and to prevent death from a respiratory complication in an infant with a large megacolon terminating in a normal lower section of the sigmoid flexure and rectum. Colostomy or colonic resection might have benefited this patient.

CASE 15.—The record of J. M., a white girl ad- mitted to the clinic at the age of 2 years, has been reported in detail in a contemporary report [1] and will therefore be briefly abstracted. At the time of this re-

port she is 2½ years old. Constipation started at birth and became progressively more resistant to medical management. Abdominal distention was noted when the patient was 3 days old and progressed steadily, until, when she was 2 years old, her abdomen was enormous. Various forms of medical management at home and on several occasions in hospitals did not relieve the distention. At the time she was admitted to the clinic, the abdomen was enormously distended. The patient was poorly nourished, ate with difficulty, vomited at times and passed small amounts of liquid stool. High enemas, abdominal and rectal manipulations, liquid petrolatum, cascara sagrada, neostigmine, castor oil and duodenal intubation during three weeks in the hospital did not decompress the megacolon. The colon was uniformly involved down to approximately the junction of the upper and middle thirds of the sigmoid flexure. Below this point the sigmoid colon and the rectum were normal. A one stage resection of the distended megacolon was performed. The terminal ileum was anastomosed to the normal distal segment of sigmoid colon. The postoperative course was afebrile but was accompanied with some dilatation of the small bowel that persisted for two weeks and required intubation. Relief was finally obtained by applying a tight elastic compression bandage to the abdomen. The child was then discharged. During the succeeding three months she has maintained normal activity and gained weight. Defecation occurs three to five times daily. The stools are soft. This patient and 2 others treated by resection of the megacolon (W. H., case 17 and P. H., case 19) are the only patients in this group that are now living.

CASE 16.—R. C., a Negro boy admitted to the clinic ten years ago, at the age of 5 years, died when he was 9. Hospitalization was advised and refused. The first symptoms developed two months after birth, when several days passed without an intestinal evacuation. Castor oil effected expulsion of a large amount of fecal material and gas. Episodes of obstipation, abdominal pain and distention, anorexia and vomiting have since recurred at intervals of approximately three months. Difficulty in breathing and speaking was noted during the episodes of severe obstipation and distention. These episodes were relieved with progressively greater difficulty by catharsis and enemas. During the intervals defecation usually occurred every two days. The abdomen became chronically distended; two months before the visit to the clinic it was described as being as large as a watermelon. Enemas and cathartics achieved only small evacuations. Examination revealed a greatly distended, taut abdomen. A large colon segmented by peristaltic waves was visible. The patient was poorly nourished. The rectum was distended by a firm fecal impaction. Hospitalization was advised and refused.

Follow-up letters revealed that serious symptoms continued. When the boy was 9 years old an emergency laparotomy was performed at another hospital and a large fecal impaction was removed through an incision in the colon. The patient was discharged fifteen days later. A review of the record of this hospitalization indicates that the rectum was normal and that the impacted fecal mass was removed from the descending colon and upper part of the sigmoid flexure. Symptoms recurred and nine months later caused the death of the patient. A copy of the certificate of death gave as the immediate cause "paralytic colon" due to "obstruction due to fecal impaction." This patient evidently falls into the group of those who s seriously handicapped by a large megacolon termina in a normal bowel. The history of the case a illustrates that patients with this condition occasiona and with difficulty dilate the normal segments of co and deliver fecal impactions to the anus.

CASE 17.—The record of W. H., a white boy admi to the clinic at the age of 7 years, has been presen in detail in a contemporary report [1] and will therei be briefly abstracted. At the time of this report t patient was 12 years old. Obstipation began at bir Cathartics and enemas were employed continuous Episodes of obstipation, cramping abdominal pain, acu distention and vomiting recurred. General nutritio was poor. The examination made at the time t patient was admitted revealed a greatly distended abd men with an enormous colon, involved uniformly throug out its length, terminating in the midsigmoid region in normal lower segment of sigmoid flexure and a norm rectum. Partial evacuation was obtained with difficult by medical means. Three years later, at the age of 1 the patient was readmitted because of progressive

Fig. 7 (case 17).—Megacolon with normal rectum and a normal lower segment of sigmoid colon in a 10 year old patient. A sympathectomy performe fifteen days before the roentgenogram was made ha partially reduced e size of the megacolon. Episode of severe distention one year later led to a one stag resection of the megacolon.

more severe symptoms. Partial decompression wa again accomplished by medical means. Sympathectomy was performed; all of the lumbar ganglions and all of the abdominal splanchnic nerves on both sides were resected. Roentgen examination fifteen days after the sympathectomy revealed reduction of the megacolon to two thirds of its original size. The rectum and the lower portion of the sigmoid colon were normal (fig. 7). For one year after this procedure defecation was more easily controlled. The state of malnutrition was un improved. An extremely severe episode of abdominal distention and vomiting occurred when the patient wa 11 and required hospitalization. The colon was again evacuated by medical means with difficulty. A one stage resection of the megacolon was performed. The terminal portion of the ileum was anastomosed to the remaining 6½ inch (16 cm.) stump of normal sigmoid

xure. The patient made an uneventful recovery and ght months later had gained 18 pounds (8.2 Kg.) ove his original weight. His appearance, general trition and activity were normal, and soft fecal terial was evacuated three to five times a day. This the second of the 3 patients treated by one stage section of the megacolon.

CASE 18.—E. P., a white boy admitted to the clinic the age of 15 years, died when he was 17. Constipan, abdominal distention and vomiting had necessitated diarrhea with evacuation of large amounts of liquid stool. Intervals as long as two to three weeks without defecation occurred every four to five months and were associated with gigantic abdominal distention, vomiting, palpitation of the heart and dyspnea. Episodes of this nature became more frequent, and the residual distention became greater. At the time the patient was admitted to the clinic the abdomen was enormously distended by large loops of colon (fig. 8*A*). The dilated, impacted segments rested above the pelvis and

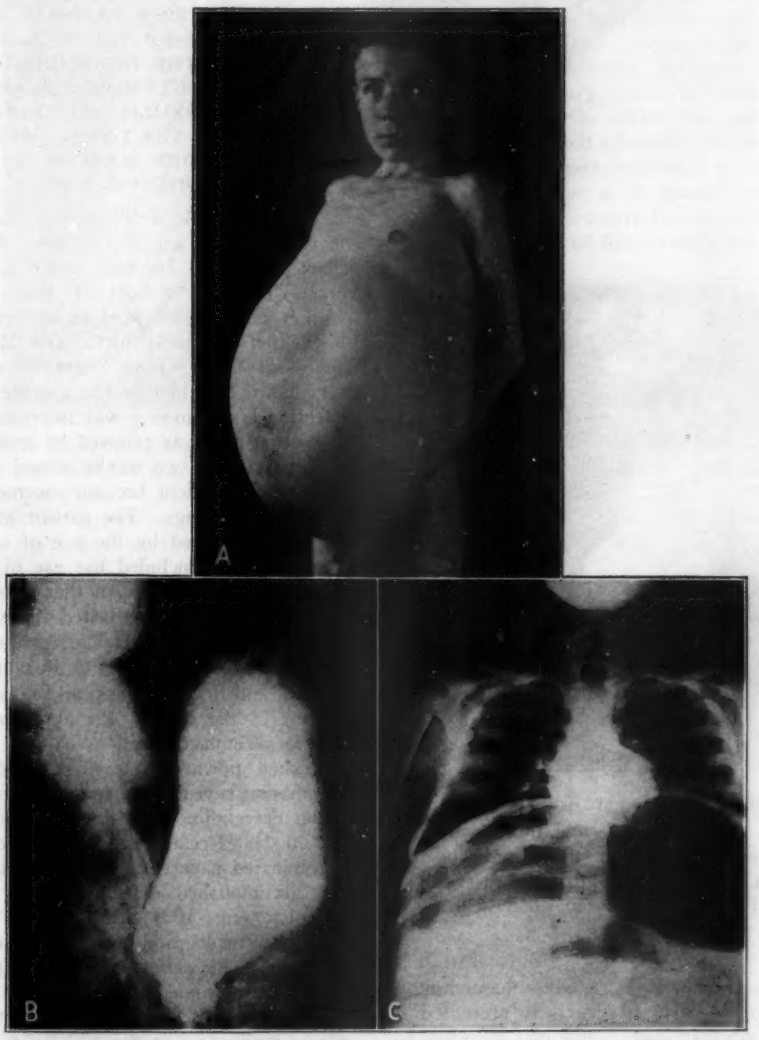

Fig. 8 (case 18).—*A*, photograph of a 15 year old patient with megacolon, showing the abdominal distention, which had progressed from the time of birth. The colon ruptured spontaneously two years later, and the patient died. The normal rectum and normal lower segment of sigmoid colon of this patient resisted evacuation efforts. Colon resection and iliosigmoidostomy were anatomically possible. *B*, roentgenogram of the same patient, showing the normal rectum and a normal lower segment of sigmoid colon. The enormously impacted loops of the proximal segments of the colon overlie the normal portion of the sigmoid flexure. *C*, roentgenogram of the chest showing the upward displacement of the diaphragm and the compression of the lungs in the same patient. Pulmonary and cardiac symptoms occurred during episodes of severe distention.

n enema when the boy was 9 days old. Enemas were mployed daily until the patient was 6 years old. They ccomplished evacuations but did not prevent progressive evelopment of abdominal distention. Enemas were iven once a week after the boy was 6. Each enema as followed by twenty-four to forty-eight hours of could not be reached by rectal examination. Roentgen examination confirmed the clinical impression of a gigantic megacolon that involved equally all portions of the colon down to the lower part of the sigmoid flexure and the rectum (fig. 8*B*). The upward displacement of the diaphragm, flaring of the costal

margins, compression of the lung and transverse position of the heart are demonstrated in figure 8 *C*. Dyspnea and tachycardia during episodes of acute distention are understandable. High colonic irrigation, massive doses of liquid petrolatum and daily administration of deproteinated pancreatic extract achieved only moderate decompression of this colon during eleven days' hospitalization. Sympathectomy was advised and refused.

A letter of inquiry seven years later revealed that the patient had died two years after removal from the hospital. The mother stated that abdominal distention had persisted and that the obstipation had resisted all forms of nonsurgical treatment. On the day before his death the patient had felt something break in the abdomen. The cause of death given on the death certificate was acute perforation of a megacolon and peritonitis. This record illustrates the serious prognosis that may be associated with the presence of a uniformly enlarged colon terminating in a segment of normal sigmoid colon and a normal rectum. A colostomy or a resection of the megacolon could have been performed.

Fig. 9 (case 19).—The normal rectum, the normal lower segment of sigmoid flexure and the anastomosis between the terminal portion of the ileum and the sigmoid colon in a patient one month after resection of the megacolon. The patient was in good health one year later.

CASE 19.—The record of P. H., a white man admitted to the clinic at the age of 19 years, is presented in detail in a contemporary report [1] and will therefore be briefly abstracted. At the time of this report the patient is 22½ years old. Constipation and abdominal distention developed after birth and progressed steadily. The patient had episodes of acute impaction in late childhood. When the patient was 19, the abdomen equaled that illustrated in figure 8 *A*. Three hospitalizations because of distention were necessary during the next two years. The entire colon was uniformly enormous down to the lower part of the sigmoid region from which point the sigmoid colon and the rectum were of normal size. The megacolon could be evacuated by medical means only with extreme difficulty. When the patient was 21, it was evident that serious difficulty was inevitable. The megacolon was therefore resected by a one stage operative procedure, and the terminal ileum was anastomosed to the remaining short stump of normal sigmoid flexure. The patient had a nor convalescence and during the next year gained pounds (20.4 Kg.) over his initial weight. Soft f material is now evacuated three to four times d Figure 9 illustrates the short segment of normal sigm colon, the normal rectum and the anastomosis with terminal part of the ileum after operation. This is third patient treated by one stage resection of megacolon. These 3 patients are still living at time of this report, while the other 4 patients in group have died.

HISTORIES OF FIVE PATIENTS WITH ENORMO ENLARGEMENT OF THE SIGMOID OR THE SIG MOID AND THE DESCENDING COLON WITH OR WITHOUT SOME ENLARGEMENT OF THE PROXIMAL SEGMENTS OF THE COLON, THE LOWER PART OF THE SIGMOID FLEXURE AND THE RECTUM (GROUP 3)

CASE 20.—L. B., a Negro boy, was first admitted the clinic at the age of 6 years. At the time of th report he is 11. He was admitted to the hospital Duke University School of Medicine twice, and addition he was followed in the clinic for one yea Obstipation began at birth, and abdominal distenti slowly increased. Four years before the patient w first admitted to the clinic an episode of acute abdomin distention and vomiting was interpreted as an intestin obstruction and was relieved by enemas and cathartic Two years later two weeks passed without an evacu tion, and the patient became enormously distended a vomited all feedings. The patient was hospitalized, a relief was obtained by the use of enemas. Treatme since birth had included the use of a wide variety laxatives and enemas. Another episode of obstructio distention and vomiting lasted three days and initiate the first admission to Duke Hospital. Abdominal ex amination revealed enormous distention with intestin patterns and fecal masses visible and palpable in a portions of the colon. Rectal examination revealed hard fecal impaction almost at the anus. This cou be pushed upward, releasing liquid feces. Roentge examination revealed enormous dilatation and impactio of the descending and sigmoid colon and the rectu (fig. 10 *A*). Rectal manipulation, repeated enemas an deproteinated pancreatic extract during the next twen days accomplished defecations but failed to evacuat the colon (fig. 10 *B*). One week later the abdome was less distended and bowel movements were occurrin regularly. The patient was discharged and advised t diet and use liquid petrolatum and daily enemas an to return to the clinic. Three and a half months late he was readmitted to the hospital with the history tha he had gone as long as two weeks without defecation The last movement before this admission had occurred ten days earlier. Examination revealed essentially th same conditions as were observed at the first visit. Com plete evacuation of the colon was obtained within tw days by high colonic irrigation. Roentgen examination after the injection of air revealed some dilatation of all segments of the colon from the cecum to and including the rectum. The patient was discharged two week later with a regimen of liquid petrolatum, deproteinated pancreatic extract and enemas. During the following four months defecation was regular, frequently without the use of enemas. A follow-up report three and a half years later revealed that this patient was living although somewhat retarded. This record also demonstrates that a large megacolon associated with involve-

nt of all of the sigmoid colon and rectum may be mpatible with a reasonably normal life.

Case 21.—F. P., a white boy, was first admitted to clinic at the age of 9 years. At the time of this port he is 20. Moderately severe obstipation and dominal distention started at birth. Symptoms were rtially controlled by laxatives. At times five or six abdomen apparently filled by an oval mass that extended from the symphysis to the left costal margin. The rectum was of normal size. The rectum and the lower portion of the sigmoid colon seemed to pass upward behind the mass. Roentgen examination demonstrated an enormous fecal impaction in the descending colon and the upper portion of the sigmoid flexure and a relatively

Fig. 10 (case 20).—*A*, roentgenogram showing the distended and impacted megacolon in a 6 year old boy. he major involvement is in the descending and sigmoid colon and the rectum. Rectal manipulation and medical eatment had been employed for four days. *B*, roentgenogram taken twenty days later; medical treatment as partly broken up the impaction but has not relieved the distention due to gas. This patient, with enormous volvement of the lower part of the colon and rectum, is living, without surgical intervention and with only oderate difficulty, five years later.

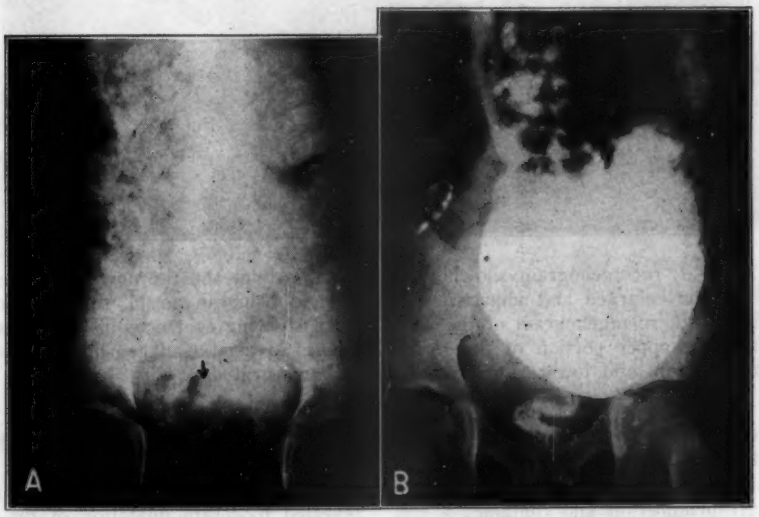

Fig. 11 (case 21).—*A*, roentgenogram showing enormously dilated descending colon and upper portion of the igmoid colon in a 9 year old boy. The arrow indicates the normal lower segment of sigmoid colon and the ormal rectum, visualized by air contrast. Additional examinations demonstrated that the proximal segments f the colon were also dilated and at times impacted. *B*, roentgenogram of the same patient showing the megalon after repeated enemas given during nine days. The impaction has been partly washed out. The normal ower portion of sigmoid colon and rectum have not dilated.

ays passed between evacuations. During the month efore the patient was admitted to the hospital a hard ass became evident in the lower part of the abdomen. t was described as being about the size of a cantaloup. Defecation had occurred regularly every two or three ays. Examination revealed a moderately distended normal lower portion of the sigmoid colon and rectum (fig. 11 *A*). Manipulation, enemas and deproteinated pancreatic extract gradually cleaned out the colon. A roentgenogram taken ten days later after an enema of barium sulfate (fig. 11 *B*) demonstrates that decompression was progressing by liquefaction of the impaction

and not by dilatation of and delivery through the lower portion of the sigmoid colon and the rectum. Several weeks later proctoscopic examination and roentgen examination after an enema of air when the colon was completely empty redemonstrated a normal rectum and at least 6 inches (15 cm.) of normal sigmoid colon. The patient was discharged receiving the same program supplemented by diet and liquid petrolatum. He was followed in the clinic for twelve months. He had regular evacuations except during two episodes of impaction associated with nausea and vomiting that required many enemas. The general state of nutrition was poor. One year after his first admission to the hospital the patient was again hospitalized. The abdomen was moderately distended. The descending colon and the upper portion of the sigmoid flexure remained normal. Complete evacuation was achieved by high colonic irrigation for five days.

This boy did not return for regular observation. He did return ten years later at the age of 20 in response to follow-up correspondence. He appeared well nourished. Medical treatment during the interval consisted only of large amounts of liquid petrolatum once or twice a week. Defecation occurred regularly. Episodes of distention and vomiting had not recurred. The abdomen was slightly protuberant and contained a soft impaction in the descending colon and the upper portions of the sigmoid flexure about 5 inches (12.5 cm.) in diameter. Eight quarts (7.5 liters) of barium sulfate suspension filled the greatly dilated sigmoid flexure and descending colon without passing on into the upper segments. The rectum and the lower portion of the sigmoid colon, examined digitally, proctoscopically and roentgenologically, were now moderately dilated. The patient assured us that it was time for him to take a heavy dose of liquid petrolatum and that this would effect adequate evacuation. This patient had undoubtedly been relieved of his earlier severe symptoms by the development of progressive dilatation of the lower portion of the sigmoid flexure and the rectu The enormous capacity of the descending colon and t upper portion of the sigmoid flexure had not chang The earlier moderate dilatation of the ascending a transverse colon had not increased.

Case 22.—D. S., a white boy whose age at the ti of this report was 16 years, was admitted to the cli when he was 11. Abdominal distention had occurr when he was 6 months old. It was relieved by enem Liquid petrolatum given every other day produc regular evacuations until the patient was 5 years o Enemas and castor oil then became necessary. D proteinated pancreatic extract was also employed. Wh the boy was 9 years old, attacks of acute distenti followed by massive evacuations started and recurr every two or three months. These episodes beg with severe abdominal cramping pain and vomiting a ended with a period of diarrhea with frequent evac tions of thick pasty stool. An enormous amount fecal material was usually expelled within twenty-fo hours. Examination after the first admission reveal a moderately protuberant abdomen. A rounded de mass occupied the lower quadrants. The impacte stool could not be reached by rectal examination. Th rectum was normal. Roentgen examination (fig. 12 *A*) revealed moderate dilatation of the entire colon, wit extensive fecal impaction and enlargement of the de scending colon and the upper portion of the sigmoi flexure. The rectum and the lower portion of th sigmoid flexure, as demonstrated by the use of a enema of barium sulfate, were normal. The colon wa cleaned out during twelve days in the hospital by us of liquid petrolatum and enemas. Treatment with de proteinated pancreatic extract was begun and continue for seven months. Spontaneous defecation occurre for the first time. Considerable improvement wa noticed for five months. Two months later tw episodes of impaction occurred and the patient wa readmitted to the clinic. Roentgen examination showe

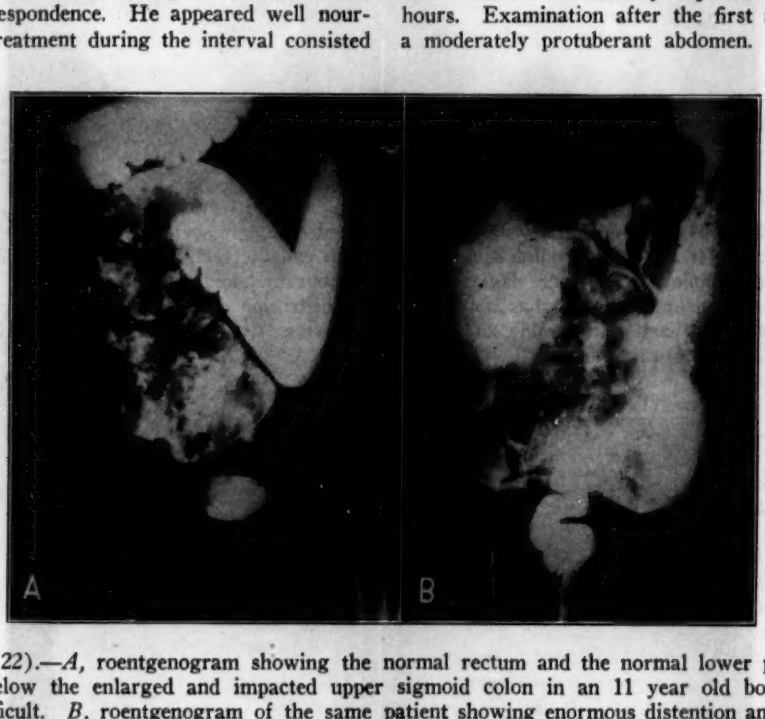

Fig. 12 (case 22).—*A*, roentgenogram showing the normal rectum and the normal lower portion of sigmoi flexure present below the enlarged and impacted upper sigmoid colon in an 11 year old boy. Evacuation o the colon was difficult. *B*, roentgenogram of the same patient showing enormous distention and impaction of th descending colon and the upper portion of the sigmoid colon. Medical management had been employed seve months. The normal rectum and lower sigmoid are again demonstrated.

at the dilatation and impaction of the colon exceeded e original condition (fig. 12 *B*). The cecum con- ined hard fecal material. The colon was evacuated ring three weeks in the hospital. Proctoscopic ex- minations toward the end of this period again revealed at the rectum and the lower portion of the sigmoid owel, up to 12 inches (30.5 cm.), were normal. De- roteinated pancreatic extract and enemas were advised. he patient failed to return for further study or reatment.

A letter of inquiry four years later revealed that eproteinated pancreatic extract, enemas and daily doses f laxatives had all failed. The parents, by trial and rror, discovered that evacuation could best be achieved y giving 1½ to 2 ounces (45 to 60 Gm.) of magnesium ulfate once a week with one smaller additional dose necessary. The boy, although now 6 feet (183 cm.) ll, weighs 145 pounds (65.8 Kg.). Abdominal dis- ntion is moderate. This history illustrates well the ccurrence of megacolon with the lower portion of the igmoid flexure and the rectum normal and indicates he difficulty of management of this condition. It is ossible that some dilatation of the lower portion of the igmoid flexure and the rectum has occurred or will ccur.

Case 23.—H. L., a white boy admitted to the clinic t the age of 12 years and 15 years old at the time of his report, had obstipation, abdominal distention and omiting in the first few days of life. Abdominal istention remained constantly through childhood. pontaneous defecation never occurred. Enemas and axatives were constantly employed. Attacks of vomit- ng and distention occurred and were relieved by nemas. Respiratory embarrassment was evident during hese attacks. The abdomen at the time the patient as admitted was greatly distended. Large loops of olon, exhibiting occasional peristaltic movements, were isible. Rectal examination revealed a relaxed sphincter nd a dilated rectum containing some gas and small rticles of hard fecal material. Roentgen examination evealed moderate fecal impaction and dilatation of he upper part of the colon. The descending colon nd the upper portion of the sigmoid colon reached a iameter of 7 inches (18 cm.). During one month's ospitalization repeated high enemas, liquid petrolatum nd, later, mecholyl bromide partially decompressed he abdomen. A diagnostic spinal anesthesia produced o evident change in peristaltic activity. The patient as discharged receiving mecholyl bromide and liquid etrolatum, with enemas as required. The family hysician reports that at the age of 15 the boy is much mproved but far from normal. Defecation occurs aily with the aid of liquid petrolatum and mecholyl romide. Abdominal distention is moderate. Visible olonic peristalsis is present. The thoracic cage is high ith flaired costal margins. The patient carries on ormal school activities. He is, however, poorly ourished.

Case 24.—D. S., a white girl who is 20 years old at he time of this report, was admitted to the hospital our times, the first when she was 13, and followed n the clinic during the remainder of a period of ourteen months. Her parents died of tuberculosis, and he relatives with whom she lived knew little of her arly history. At the age of 10 she was treated for racheobronchial tuberculosis in a sanatorium for eight nonths and discharged with the process arrested. Daily oses of liquid petrolatum were required in the hospital ecause of constipation. When she was 11, episodes of alternating diarrhea and constipation occurred and a diagnosis of Hirschsprung's disease and fecal impaction was established. Three or four days passed between evacuations. Cathartics, liquid petrolatum and enemas were employed. Multiple arthritic pains developed when the child was 13 and brought her to the hospital. A diagnosis of chronic infectious polyarthritis was made. The abdomen was moderately enlarged with the lower quadrants and the pelvis filled by a large mass of impacted fecal material. Some dilatation of the entire colon was visible. Rectal examination revealed an enormous rectum filled by a hard fecal impaction. Abdominal roentgenograms demonstrated the enlarge- ment of the entire colon with the descending, sigmoid and rectal portions enormously distended. The colon was slowly evacuated by the use of a series of enemas, large quantities of liquid petrolatum and deproteinated pancreatic extract. The residual size of the colon and rectum is demonstrated in a roentgenogram (fig. 13) taken one month after the patient was admitted, when evacuation was almost complete. Proctoscopic and digital examination at this time showed that the rectum and descending colon had a diameter of 6 inches (15 cm.)

Fig. 13 (case 24).—Enormous residual size of the rectum of a 13 year old patient after evacuation of the megacolon by the use of repeated enemas, liquid petrolatum and deproteinated pancreatic extract. Re- curring low fecal impaction gave symptoms of alternat- ing constipation and diarrhea without abdominal dis- tention or vomiting.

down to the sphincter muscle. The patient was treated for fourteen months, chiefly because of the arthritis. Rectal fecal impactions producing intermittent diarrhea and constipation recurred three times. Between impac- tions the abdomen remained flat and at times was scaphoid.

Follow-up correspondence reveals that at the time of this report the patient is living and well. She recently delivered a 7 pound (3,175 Gm.) baby. During preg- nancy cascara sagrada was prescribed. Abdominal dis- tention and fecal impaction have not recurred during the seven years that has elapsed since the last visit to the clinic. Defecation has been facilitated by taking 2 or 3 tablespoons (30 to 45 cc.) of liquid petrolatum once or twice a week. Enemas have not been employed. This history well illustrates the subsidence of symptoms of alternating diarrhea and constipation and obstruction

from fecal impaction associated with a megacolon that was most dilated in the lower part of the sigmoid colon and the rectum.

SUMMARY

Of 24 patients with megacolon (Hirschsprung's disease), 21 were treated by conventional medical management, consisting chiefly of diet, laxatives, enemas and parasympathomimetics, occasionally supplemented by sympathectomy. Three of the 21 patients required emergency laparotomy. A severe fecal impaction was removed through an incision in the colon in 1. Volvulus of the sigmoid colon was reduced in 2. One of these later underwent a partial resection of the sigmoid colon. Six of the 21 patients have undergone a remission of symptoms without surgical intervention and at an average age of 12 years are having regular daily intestinal evacuations. One patient underwent a remission of symptoms after sympathectomy and is well at the age of 17. Seven have continued to have mild to severe symptoms and at an average age of 15 are receiving medical treatment. Five patients, including 1 of the 3 who had a laparotomy, have died, 2 at the age of 15 months and 3 at the ages of 9, 17 and 24 years.

The remaining 3 of the 24 patients presented alarming symptoms and were treated by one stage resection of the megacolon and ileosigmoidostomy. These 3 are now living and well.

Medical management was supplemented by sympathectomy for 4 of the 24 patients. The gross pathologic picture was not significantly altered. One sympathectomized patient with a megacolon that terminated in an enlarged rectum improved and is living and well at the age of 17. Another with a megacolon also terminating in an enlarged rectum was clinically improved for three years and then died at the age of 24 with an acute impaction and perforation of the colon. Two others with an enlarged megacolon terminating in a normal lower segment of the sigmoid colon and a normal rectum experienced difficulty after sympathectomy. One died two months after operation, at the age of 15 months, of terminal pneumonia precipitated by abdominal distention during an attack of pertussis. In the other acute abdominal distention developed at the age of 11 and led to resection of the megacolon.

The patients reported in this study include all of those with megacolon examined since the opening of Duke clinic in 1930. It seems probable that at the present time they are younger than the patients normally encountered and that as time passes more of them will encounter difficulty.

The evidence derived from the clinical stu seems to indicate that the megacolon involv the entire colon and rectum in 12 patients. definitely involved the proximal segments of t colon and terminated in a segment of norm colon, usually low in the sigmoid flexure, a a normal rectum in 7 patients. In 5 of the patients the normal segment of sigmoid colon a the rectum dilated at times to permit difficu delivery of large fecal impactions to the anus a then, after the evacuation, resumed their norm size. Four of the 7 patients died. Thre treated by resection of the megacolon are livin The megacolon definitely involved enormous only the sigmoid and descending colon in patients.

CONCLUSIONS

Significant conclusions are evident when th 24 case histories are grouped in accordanc with the observed pathologicoanatomic change rather than summarized in the conventiona manner as a unit.

Group 1.—Uniform involvement of the entir colon terminating in a dilated or easily dilatable rectum occurred in 12 patients. Eight are now living, and evacuating their colons readily, a an average age of 10 years. One died three years after a sympathectomy, at the age of 24 Of the remaining 3, 1 is having moderately severe trouble at the age of 6, 1 required surgical reduction of a volvulus of the sigmoid colon a the age of 20 and 1 had a reduction of a sigmoid volvulus at the age of 59, with a recurrence three months later and resection of the sigmoid colon. It appears that protracted medical management of patients in this group is indicated as long as adequate nutrition can b maintained and persistent abdominal distention avoided. Sympathectomy does not alter significantly the gross pathologic conditions, and by interrupting visceral sensory pathways it may permit negligence on the part of the patient and the development of serious impactions. Segmental resection of the colon, as reported in the literature, has been followed frequently by recurrence of impactions proximal to the anastomosis. It would therefore seem that resection of the colon, if indicated for a patient with this condition, should start at the cecum and continue distally through the proximal divisions of the colon to the sigmoid region if necessary in order that the liquid contents of the ileum may empty into the remaining, and preferably rather short, segment of involved bowel.

Group 2.—Uniform dilatation of the proximal segments of colon terminating in a normal segment of bowel, usually in the sigmoid region,

nd a normal rectum occurred in 7 patients. our receiving conventional management died, 2 t the age of 15 months, 1 at 9 years and 1 at 7 years. One had a sympathectomy. The emaining 3, with equally severe symptoms and ith enormous megacolons, were treated at the ges of 2, 11 and 21 by resection of the mega- olon and anastomosis between the terminal ortion of the ileum and the remaining stump f normal sigmoid colon. One of them had reviously had a sympathectomy. These 3 are ving and well. Patients in this group demon- trated greater or more persistent abdominal nlargement than was observed in the other atients. It seems that when medical manage- ent fails to control obstipation and distention in atients with megacolon of this type and ymptoms become alarming, colostomy or, if ossible, resection of the megacolon is indicated.

Group 3.—Enormous enlargement of the sig- oid colon or of the sigmoid and descending olon, with or without involvement of the roximal portions of the colon and of the rectum, ccurred in 5 patients. The 5 are now living, t an average age of 16, 2 free from symptoms nd 3 with moderately severe symptoms. Three f these patients had definitely enlarged rectums, had a normal rectum and in 1, during the ourse of observation, the rectum underwent a ransition from normal to enlarged with relief f symptoms. Three of the patients inde- pendently, by trial and error, have determined that laxatives taken once or twice a week pro- duce more effective elimination than laxatives taken daily. It seems that protracted medical management of patients in this group is justified and that in patients with normal segments of lower sigmoid colon and normal rectums the structures may become progressively dilated and accomplish massive evacuations of impactions.

Careful examination of the distal portion of the colon of patients with Hirschsprung's disease by repeated rectal and proctoscopic examina- tions, and roentgen examination after enemas of barium and air; and of the proximal segments of the colon by roentgenography after oral ad- ministration of barium sulfate will aid in an understanding of the pathologic anatomy present and in a grouping of patients that may facilitate the prognosis and the choice between protracted medical management and resection of the colon. The examinations must be repeated after de- compression of the colon, because normal rectums and normal segments of sigmoid colon may appear enlarged during the delivery of an impaction.

Dr. W. C. Davison, Dr. D. Hart, Dr. A. M. McBryde, Dr. J. Arena, Dr. A. H. London and Dr. J. A. Speed cooperated in the presentation of the clinical material.

Duke University School of Medicine.

MENINGOCOCCIC MENINGITIS

REVIEW OF ONE HUNDRED CASES

KURT GLASER, M.D.
CHICAGO

The cases of 100 consecutive patients with epidemic meningitis admitted at the Louisville General Hospital during the epidemic of 1943 are analyzed and discussed in this paper in order to throw some light on the problem of reduction of the death rate in future epidemics.

All patients with clinical signs and symptoms of meningitis were admitted to the isolation department of the hospital and a lumbar puncture was done immediately to confirm the diagnosis.

Of the 100 patients, 55 were men or boys and 45 were women or girls; 64 were white persons and 36 were Negroes. If one considers that the white population of Louisville is about six times as large as the Negro population, one can readily see that the number of Negro patients is relatively higher. This fact throws a significant light on the public health aspect of the problem and on the epidemiology of the disease. The difference in number can most likely be attributed to the poor and unhygienic housing and living conditions of the Negro portion of the population. The shift of large parts of the population due to war industries has also been contributory.

Of the 100 patients studied, 66 were in the first two decades of life and only 34 in the five following decades. Children under 5 years of age seem to be most susceptible. Of the 66 patients under 20 years of age, only 2 died, as compared with 15 of the 34 over 20.

SYMPTOMS

If it had been possible to obtain exact histories of all patients, they would have shown that "minor complaints" were even more common and of longer duration than our figures show. However, the mental state of 64 of the 100 patients at the time they were admitted to the hospital made it necessary to obtain the information from sources that were not always reliable.

Forty-four patients reported that they had "colds" prior to the development of the first meningeal symptoms. The question arises whether infection of the upper respiratory tract is a prodromal syndrome or an independent disease that prepares the passages for invasion by the meningococci already lodged in the mucosa. Forty-seven patients reported that they had headaches for two or more days before they were hospitalized, and 6 had had this symptom for one or more weeks without investigating the possible cause. Twenty-seven patients had pains in the neck and back for two days or more before seeking medical aid. Forty-one patients vomited for two days or more and 11 for four days or more without investigating the cause.

The last symptom but by far the most characteristic is stiffness of the neck and back and opisthotonos. These symptoms usually lead the patient to the physician, although I recall 1 patient who walked into the emergency room with his head drawn back to such an extent that he had difficulty in keeping his balance.

These data show the order of appearance of the symptoms and also indicate that if the related facts could be brought to the attention of the public, patients would seek medical aid earlier in the course of the disease, a factor which is most important in the outcome, as shown in later tables. The education of the public in this matter constitutes another public health problem.

TREATMENT

It is felt that any delay in treatment reduces the chances for recovery. To obtain the fastest service and the greatest efficiency in spite of overcrowded departments and considerably reduced attending staff, a certain routine for handling most of the cases was established at the Louisville General Hospital during the epidemic of 1943. Each patient was transported without delay of admitting procedures to the examining room of the isolation department, and a lumbar puncture was performed immediately after the history was obtained and the physical examination performed. The leukocyte count and globulin content of the spinal fluid were obtained and a specimen treated with the Gram stain was examined within the first fifteen to thirty minutes. If the laboratory data confirmed the tentative diagnosis of meningococcic meningitis, the patient then received his first intravenous dose of sulfapyridine or sulfadiazine and a

From the Louisville General Hospital, Louisville, Ky.

taneous test for sensitivity to horse serum as done if it was thought to be necessary to dminister antitoxin.

The average amount of sulfapyridine or sulfadiazine administered in twenty-four hours was ½ to 3 grains per pound (0.18 to 0.38 Gm. er kilogram) of body weight, divided into four o eight equal doses. The usual dose for an dult was 30 grains (1.8 Gm.), given every four ours. For children the first dose, given intravenously, consisted of about one half of the lculated daily dose, and for adults it was 5 Gm. fter the first dose the drug was given orally r if necessary by nasal stomach tube. Administration was continued at the level indicated or three to five days and then at a reduced level or five to seven days before it was discontinued ompletely.

Meningococcus antitoxin was given in 40 ases. The decision as to the use of antitoxin as based on the clinical appearance of the atient. Thus 14 of the 17 patients who died nd only 26 of the 83 who recovered were given ntitoxin. I have felt that although the use of he sulfonamide drugs has reduced the death ate below that recorded in any previous reports, ntitoxin might help some of the desperately ill atients who would not respond satisfactorily o treatment with the sulfonamide compounds. ince delay was to be avoided, all gravely ill atients received antitoxin when they were admitted to the hospital.

Two other factors may influence the outcome f the treatment. The first is the fluid balance. he patients received fluids by mouth, by tomach tube or by intravenous route according o their condition. The second factor is the edation of the patient. My patients were not iven any more sedatives than absolutely necesary; I preferred to restrain rather than to edate them. I believe that this factor might e instrumental in the avoidance of localized esions. A restless patient gives the purulent luid less chance to induce adhesion. In no ase in the series reported were repeated therapeutic lumbar punctures or intrathecal administration of antitoxin used.

RESULTS

Seventeen of the 100 patients died, 4 within wenty-four hours, 6 within thirty-six hours nd 10 within forty-eight hours after they were dmitted to the hospital. The mortality was qual in the groups treated with sulfapyridine nd with sulfadiazine (table 1). Six of 8 patients who recovered from the acute stage but had sequelae were treated with sulfapyridine and only 2 with sulfadiazine. Whereas no fatal toxic effects resulted from the administration of sulfapyridine, 1 of the 53 patients treated with sulfadiazine died with symptoms of urinary retention. (Unfortunately autopsy was not performed.) However, it should be added that in some cases the administration of sulfapyridine had to be discontinued and sulfadiazine used because of early toxic effects of the first drug.

TABLE 1.—*Results of Treatment with Sulfapyridine, Sulfadiazine and Antitoxin*

Treatment	Number of Patients	Number of Deaths: Total	Number of Deaths: After First 24 Hours of Hospitalization
Sulfapyridine			
Alone	28	0	0
Plus antitoxin	19	6	6
Total	47	6	6
Sulfadiazine			
Alone	32	3	2
Plus antitoxin	21	8	5
Total	53	11	7
Antitoxin plus one of the sulfonamide drugs	40	14	11

Study of such a small series permits only tentative conclusions as to the value of antitoxin in the treatment of meningococcic meningitis. Of the 17 patients who died, 14 were treated with antitoxin in addition to sulfapyridine or sulfadiazine (table 1). However, only the sickest patients were selected to receive antitoxin. Five of the 8 patients who showed complications had received 30,000 to 50,000 units of antitoxin. The presence of complications was probably related to the severity of the disease rather than to the administration of antitoxin (table 2).

TABLE 2.—*Data for the Eight Patients with Complications*

Complication	Treatment: Antitoxin Units	Treatment: Sulfonamide Compound
Iritis	None	Sulfapyridine
Blindness; facial paralysis	50,000	Sulfapyridine
Iridocyclitis; deafness	50,000	Sulfapyridine
Deafness	30,000	Sulfapyridine
Blindness	None	Sulfapyridine
Blindness; deafness	30,000	Sulfapyridine
Blindness	None	Sulfadiazine
Arthritis	50,000	Sulfadiazine

The data presented in the section on symptoms indicate that the main reason for the failure of treatment is "delay." Nine of the 17 patients who died showed characteristic meningeal symptoms two or more days before they were admitted to the hospital. Indirect evidence of the detrimental effect of delay in the initiation of medical care is provided by the high percentage of deaths in the group of patients trans-

ferred from other hospitals, in other words, patients who had first been placed in other hospitals under different diagnoses (table 3). The mental state of many patients at the time of admission to the hospital also indicated that the disease had been present for some time. Of the 83 patients who recovered 35 (42.2 per cent) were rational and 48 (57.8 per cent) were not rational at the time of admission to the hospital. Of the patients who died only 1 (5.9 per cent) was rational and 16 (99.1 per cent) were not rational at that time.

TABLE 3.—*Data for Patients Transferred from Other Hospitals*

	Total	Patients Transferred	
		Number	Per Cent
Recovered	83	11	13.2
Died	17	6	35.3
Total	100	17	17.0

A program similar to that employed in the fight against infantile paralysis but applied locally in areas of epidemics should be of value in the reduction of the death rate from meningococcic meningitis. The public should be informed about early symptoms by posters, newspapers

TABLE 4.—*Mental State of the Patients on Admission*

	Number of Patients
Irrational	29
Semicomatose	16
Unconscious	5
Comatose	7
Lethargic	1
In convulsions	2
Drowsy	2
Stuporous	2
Rational	36

and radio addresses. The educational program should start at the onset of an epidemic and continue until the number of cases reported daily declines. Information should be extended through medical societies and medical journals to physicians in specialized practice as to the frequency of occurrence and the first symptoms and signs of the condition in each epidemic.

COMMENT

It can readily be seen that earlier medical attendance and proper diagnosis would reduce the death rate considerably. Though only 2 of the 100 patients had fulminating meningococcemia (Waterhouse-Friderichsen syndrome), which usually causes death within twenty-four to forty-eight hours, 10 died within less tha forty-eight hours after admission to the hospita If these 10 patients are omitted from the seri the death rate is reduced to 7 out of 90.

The high mortality among aged patients wit meningococcic meningitis, the high incidence o the disease in crowded areas and the commo occurrence of "colds" one or two weeks prio to the onset of the typical meningeal symptom make the idea of preventive measures for ex posed persons or if possible for the whole popu lation in areas of poor living conditions at th onset of an epidemic appear advisable. Th making of routine cultures of material from th nose and throat for all persons exposed ha been tried, and it seems to be effective in th determination of carriers. The next steps woul then be treatment of the carriers and prophylaxi for the persons exposed. This plan has bee tried successfully in Army camps as reported recently by Kuhns, Nelson, Feldman and Kuhn and others.

SUMMARY

An analysis of 100 cases of meningococcic meningitis indicated that delay in treatment du to failure to report to the physician at the oc currence of the first symptoms and to mis diagnosis was mainly responsible for th fatalities.

The incidence of the disease was greatest i crowded areas with unhygienic living condition The greatest number of patients were in th first two decades of life, but this group had th smallest number of deaths.

Sulfapyridine and sulfadiazine were found t be about equally effective against meningo coccic meningitis with fewer complications fro the use of sulfadiazine. Antitoxin did not seem t be of particular value.

Education of the public, information of phy sicians as to the peculiarities and progress o epidemics and improvement of living condition seem to afford ways of attacking the problem. The prophylactic use of sulfonamide compounds as successfully tried in army camps would certainly be feasible in civilian institutions, but there would probably be great difficulty in applying it to large parts of the population.

707 Fullerton Avenue.

1. Kuhns, D. M.; Nelson, C. T.; Feldman, H. A. and Kuhn, L. R.: The Prophylactic Value of Sulfadiazine, J. A. M. A. **123**:335 (Oct. 9) 1943.

Case Reports

TYPHOID

SUCCESSIVE INTESTINAL PERFORATIONS WITH RECOVERY

EDWIN PAUL SCOTT, M.D. AND ALVIN B. ORTNER, M.D.
LOUISVILLE, KY.

W. H., an 11 year old white boy, was admitted to the Children's Free Hospital Oct. 1, 1942. The clinical history was obtained from the child's father. The chief complaint at the time of admission was the presence of fever for the past ten days.

History.—Four weeks prior to admission the patient began having headache, fever and anorexia. He was seen by the family physician at the onset of the illness. Treatment was symptomatic, consisting of administration of cathartics, antipyretics and rest in bed. Under this regimen there was a remission of symptoms. The child had no complaints and was allowed to be ambulatory. The remission lasted for one week. On Sept. 23, 1942 he again had headache and anorexia. Two days later there was a recurrence of the fever accompanied by general malaise, and the boy was again confined to bed. The fever continued, and vomiting occurred. Four days later thin yellow diarrheal stools were noted. Ten days before the boy was admitted to the hospital the fever became higher and the vomiting increased. The patient became delirious three days before being brought to the hospital. Delirium, fever, vomiting and anorexia continued until after the patient entered the hospital. On Oct. 1, 1942, nine hours prior to admission, the child experienced a sudden sharp pain in the right lower quadrant of the abdomen which lasted for approximately thirty minutes.

On inquiry it was learned that other people living in the vicinity and using the same water supply were reported to have typhoid. The patient had never been immunized against typhoid.

Physical Examination.—When the patient was admitted to the hospital, he was semiconscious and appeared to be both acutely and chronically ill. There was severe emaciation and dehydration. On the left cheek there was a port wine stain of a small hemangioma. The lips and pharynx were dry. Scattered over the skin there were numerous white papulovesicular lesions but no rose spots. The chest was normal. The abdomen was scaphoid, and respiratory motion of the anterior wall of the abdomen was limited. On palpation there were noticeable spasm and tenderness throughout, with rebound tenderness at the site of pressure. Just below the left costal margin the edge of the spleen could be palpated. On auscultation an occasional peristaltic wave could be heard. Rectal examination revealed bilateral tenderness anteriorly. The temperature was 99.4 F., and the pulse rate was 120 and the respiratory rate 38 per minute.

Laboratory Data.—The red cell count was 4,090,000 per cubic millimeter, with 13 Gm. of hemoglobin per hundred cubic centimeters of blood. The white cell count was 10,800 per cubic millimeter. The differential smear revealed 65 per cent polymorphonuclear leukocytes, 17 per cent lymphocytes, 2 per cent eosinophils, 3 per cent myelocytes and 13 per cent "stab" cells. Urinalysis revealed albumin (2 plus).

A roentgenogram of the abdomen taken with the patient in the upright position revealed dilatation of the large and the small bowel but no free subdiaphragmatic air or fluid.

Diagnosis.—The provisional diagnosis was typhoid complicated by intestinal perforation.

Preoperative Clinical Course.—Surgical consultation was obtained shortly after the patient was admitted, and it was agreed that early exploration should be done. Because of the extremely poor condition of the patient, the preoperative period was lengthened so that the fluid and electrolyte balance could be restored by parenteral administration of fluids.

Five per cent dextrose in isotonic solution of sodium chloride was given by the continuous intravenous drop method, and 300 cc. of citrated whole blood was administered.

Intestinal drainage was instituted by use of a Levine tube and a Wangensteen apparatus.

On October 2, fifteen hours after the patient was admitted, an operation was performed (A. B. O.).

Operation.—With the patient under drop ether anesthesia, the peritoneal cavity was entered through a right pararectus incision extending from 2.5 cm. above to 7.5 cm. below the umbilicus. When the peritoneal cavity was opened a mild fecal odor was noted. There was a small amount of free, turbid peritoneal fluid. The serosa covering the loops of the small intestine was hyperemic and partially covered with fibrin. Examination of the ileum revealed that the Peyer patches were greatly thickened, edematous and extremely hyperemic, the condition being most evident in the distal third. Approximately 30 cm. from the ileocecal junction there was a perforation of the ileum 0.5 cm. in diameter, sealed with omentum. Another perforation, 0.3 cm. in diameter, was found in the ileum, 2 cm. from the ileocecal junction. Both perforations were closed transversely to the long axis of the intestine by two tiers of Lembert sutures of fine silk, and a small quantity of sulfanilamide crystals was dusted between the tiers. One other Peyer patch had a light green exudate over it and appeared ready to "blow out." This area was reenforced by a single tier of Lembert sutures. Four grams of sulfanilamide crystals was then dusted into the peritoneal cavity and the edges of the wound. The wound was closed in layers with interrupted silk sutures. No drainage was instituted.

A culture of peritoneal fluid taken at the time of operation revealed typhoid bacilli.

Postoperative Course.—The patient was placed in Fowler's position in an oxygen tent. The Levine tube which had been placed in the stomach prior to the operation was again connected to a Wangensteen apparatus. Intravenous administration of 5 per cent dextrose in isotonic solution of sodium chloride was continued. This was followed by a transfusion of citrated whole blood.

On the first postoperative day Wangensteen suction was discontinued. The patient was put on a high caloric, high vitamin, liquid diet and was given succinylsulfathiazole. The initial dose was 2.5 Gm., with subsequent doses of 1.25 Gm. every four hours. Food was given

From the Department of Pediatrics, the services of Dr. James W. Bruce and Dr. W. W. Nicholson, and the Department of Surgery, University of Louisville School of Medicine.

in small quantities at frequent intervals. The fluid intake was kept between 2,500 cc. and 3,000 cc. daily, by using parenteral administration of dextrose, saline solutions and blood to supplement the oral intake. On October 5, three days after the operation, the rate of respiration increased to 45 per mintue. Examination of the lungs revealed scattered rales. A diagnosis of bronchopneumonia was made and was confirmed by roentgen examination. One gram of sulfathiazole was given every four hours with the succinylsulfathiazole.

On October 6 the red cell count was 3,990,000 per cubic millimeter, with 12 Gm. of hemoglobin per hundred cubic centimeters of blood. The white cell count was 8,500. Eberthella typhosa was found in the stools and vomitus. The patient's serum agglutinated E. typhosa in dilutions of 1:1,280 and Salmonella paratyphosus A and B in dilutions of 1:160 (chart).

The general condition remained poor; the fever was continuous, and the pulse rate gradually increased. At

tiers of interrupted sutures of silk in the same manner as in the previous operation.

The second perforation was found just proximal to the ileocecal valve, and since it was of larger diameter a mushroom catheter was introduced as in a Hendon ileostomy. This catheter was brought out through a stab wound in the right flank. After 4 Gm. of sulfathiazole crystals was dusted into the peritoneal cavity, the abdominal wound was closed with "through and through" silver wire sutures.

Postoperatively a Levine tube was introduced into the stomach, and both it and the ileostomy tube were connected to a Wangensteen suction apparatus. Further transfusions of whole blood were given, and these were supplemented by parenteral administration of dextrose and isotonic solution of sodium chloride. On the evening of October 8, feeding of a high caloric diet was started. Two hundred cubic centimeters was given every two hours, and the Levine tube was clamped off for one

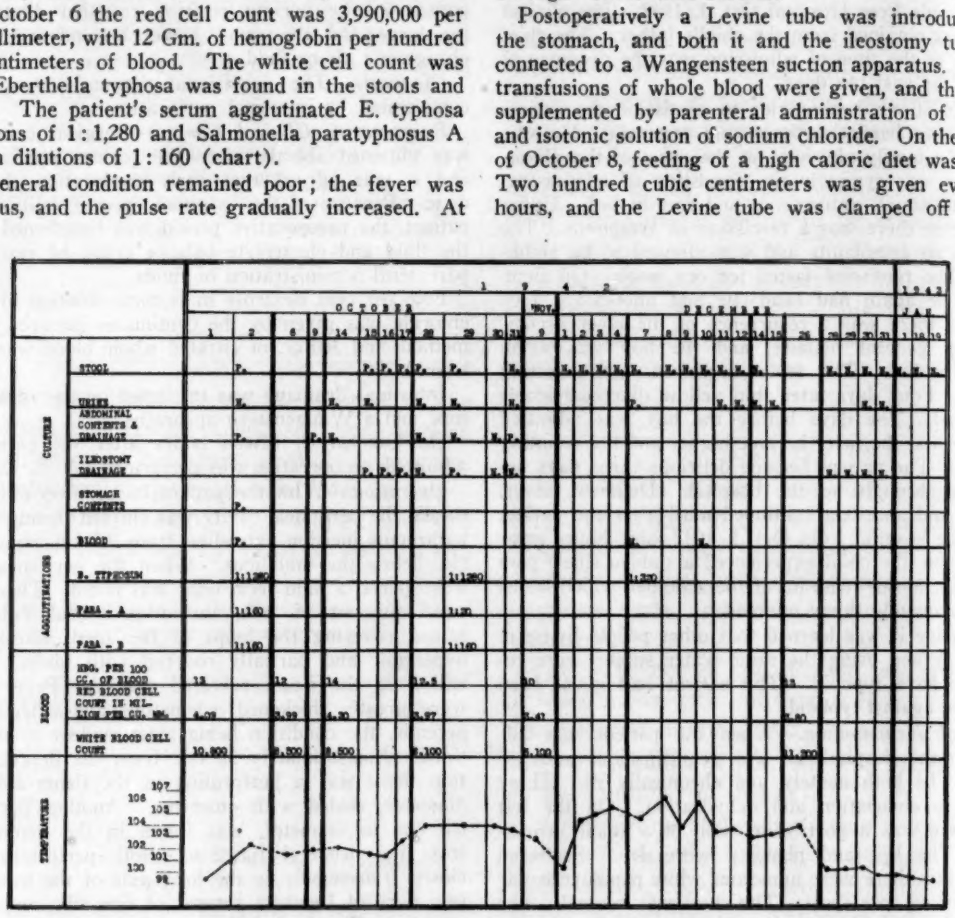

Chart of the clinical course of W. H. from Oct. 1, 1942 to Jan. 19, 1943. *P* indicates that a culture of the material listed was positive for typhoid bacilli; *N* indicates that a culture was negative.

7:00 p. m. on October 7, the fifth postoperative day, the patient experienced sudden, acute abdominal pain. Physical examination revealed extreme tenderness in the right lower quadrant and generalized distention. It was suspected that another perforation of the ileum had occurred. An exploratory laparotomy was done immediately (A. B. O.), with the patient under spinal anesthesia. The abdomen was entered through the previous incision, which was healing by first intention. Again a foul odor was noticed in the peritoneal cavity. Exploration revealed that the previously closed perforations were healing, but two new perforations of the ileum were found. One of these, approximately 24 cm. from the ileocecal valve, was completely plugged by omentum. Through the opening formed by the omentum and this portion of the ileum, another loop of small intestine had descended, forming an internal hernia and giving rise to an intestinal obstruction. The omentum was withdrawn from the perforation; the internal hernia was relieved, and the perforation was closed with two

hour after each feeding. Administration of sulfathiazole and succinylsulfathiazole, which had been discontinued prior to the second operation, was resumed orally. Daily oral administration of 100 mg. of vitamin C was begun on October 9.

The general condition of the patient improved, but his temperature remained elevated. A fecal fistula developed at the site of the abdominal wound.

On October 26 the ileostomy tube was removed. Cultures of excreta from both the ileostomy opening and the fecal fistula were positive for E. typhosa. On October 31 the first negative stool culture was obtained. Both wounds gradually healed. The temperature decreased, and from November 22 until December 2 it remained normal.

On December 2 the patient again became febrile, and his temperature rose in a "step-ladder" fashion. A recrudescence of typhoid, an abscess of the liver or a subdiaphragmatic abscess was suspected as the cause of the fever. Repeated fluoroscopic examinations re-

aled normal motion of both sides of the diaphragm. e reaction to the cephalin-cholesterol flocculation test s elevated to 3 plus, but the bilirubin content of the od was within normal limits. The stool cultures mained negative, but on December 7, for the first time, e urine contained typhoid bacilli. In view of this it s considered that the fever was caused by a recru- scence of typhoid.

Supportive treatment was continued. The general ndition of the patient improved, but he continued to ve a low grade fever.

On December 26 he suddenly had an acute colicky dominal pain. Examination revealed generalized ab- minal tenderness, with noticeable distention. Rectal amination revealed no symptoms. A diagnosis of estinal obstruction due to adhesions was made, and e peritoneal cavity was again explored (A. B. O.). he exploration was carried out with the patient under her anesthesia, and the abdomen was entered through e old wound. The jejunum and the upper part of the um were distended, and the obstruction was found to due to many dense adhesive bands in the region the previous ileostomy. The appendix, which was und down in the adhesions, was resected to facilitate e lysis of adhesions. During the dissection the ileum the side of the previous ileostomy was inadvertently ened, and another ileostomy was therefore performed. he pathologist's report on the appendix described ronic infectious granuloma resembling that of typhoid. The postoperative course was uneventful. The tem- rature became normal on the fourth day after the operation. On Jan. 5, 1943 the ileostomy tube was removed, and drainage ceased shortly thereafter. On January 21, the one hundred and thirteenth day of hospitalization, the patient was discharged.

Subsequent visits to the clinic revealed a satisfactory convalescence.

On April 25 the patient was again admitted to the Louisville General Hospital with a history and physical symptoms suggestive of intestinal obstruction. Treatment was conservative, and within forty-eight hours he was asymptomatic. He was discharged April 28.

On November 6, thirteen months after the original admission, the boy was in an excellent state of nutrition, and he was attending school. His only complaint was an incisional hernia, for which he was wearing an abdominal support.

SUMMARY

An 11 year old boy with typhoid survived successive multiple intestinal perforations. In a review of the literature we have been unable to find a report of survival of typhoid complicated by successive multiple intestinal perforations.

We believe that early surgical intervention is indicated for intestinal perforation due to typhoid and that it was largely responsible for the recovery of this patient.

University of Louisville School of Medicine.

FATAL STATUS EPILEPTICUS

M. G. PETERMAN, M.D.
MILWAUKEE
AND
KURT GLASER, M.D.*
CHICAGO

Status epilepticus is a rare but serious complication of idiopathic epilepsy in children. In adults it is often fatal. However, in twenty-two years of special interest in epilepsy one of us, M. G. P., had not seen a patient in whom the condition was fatal or resisted all treatment. A recent case is presented because status epilepticus developed after the child had been on a fasting diet for four days and because she did not respond to treatment that exhausted our resources.

REPORT OF A CASE

R. P., a white girl, was first seen by one of us (M.G.P.) Nov. 6, 1935, at 5 years of age. She had had convulsions for one year. Physical examination revealed only fatigue posture and dental caries. On the basis of the history and a description of the seizures a diagnosis of idiopathic epilepsy was made. The child was given a high fat (not weighed), low fluid (1,000 cc. daily) diet with 0.032 Gm. of phenobarbital three times a day. Administration of phenobarbital was discontinued by the parents after about six months. The patient was well and free of seizures until Oct. 1, 1942. Seizures then recurred and were described as dizzy spells with tonic and clonic spasms but with no loss of consciousness and no loss of control of the sphincters. The seizures were preceded by auras of gastric uneasiness. The family physician prescribed phenobarbital again, but the seizures increased in severity and were accompanied with loss of consciousness as they decreased in frequency.

The patient's birth was essentially normal. She was a full term infant with a normal delivery. She had had measles and mumps. Her progress in school was normal. One of the mother's sisters had lost 2 children with convulsions in infancy.

The patient was admitted to the Milwaukee Children's Hospital on Oct. 5, 1943, at the age of 12 years, for treatment in the private service of one of us (M. G. P.). Physical examination revealed a well developed, well nourished child with normal mentality. The left ankle was swollen, painful and tender, with an area of ecchymosis on the lateral aspect (the child was said to have injured her ankle in a recent fall). The neurologic examination revealed no abnormality, and the optic disks appeared to be normal. The blood count and the urine were normal. The blood contained 80 mg. of sugar, 10.4 mg. of calcium and 5.1 mg. of phosphorus per hundred cubic centimeters. The electroencephalogram made in the office of one of us (M. G. P.) Oct. 5, 1943, showed recurring delta activity, with seven per second waves.

The patient was given a fasting diet which consist of 1,000 cc. of unsweetened orange juice and 1,000 c of clear diabetic broth with six cellulose wafers (n food value) a day. On October 7 she had three mi grand mal convulsions. On October 8 she had tw convulsions and her temperature rose to 102.6 F (rectal). On October 9 there were four convulsion but the temperature receded to 100.4 F. (rectal). O October 10, beginning at 10 p. m., the patient ha four seizures in forty-five minutes. The last seizur was longer and more severe than any of the previou ones and was followed by deep, exaggerated respira tion. The patient received 0.032 Gm. of phenobarbita at two to four hour intervals. The urine contain acetone (2 plus reaction) and a faint trace of diaceti acid. The seizures became more frequent; there wer nine convulsions between 7 and 8 p. m. The dange of impending status epilepticus was considered. Th dose of phenobarbital was increased; 0.032 Gm. o diphenylhydantoin sodium was given, and sweetene orange juice was administered to counteract possibl hypoglycemia. In the early morning of October 1 the convulsions continued at eight minute intervals an vinyl ether was given. The patient relaxed completely. Two cubic centimeters of 50 per cent solution of mag nesium sulfate was injected intramuscularly. At 8 a. m a spinal tap was done to relieve the intracranial pres sure. After the first 4 cc. of fluid was removed, th patient went into another seizure, maintaining the exac eight minute interval between seizures. The needle wa removed and reinserted after the convulsion. Another 10 cc. of fluid was removed. The patient returned t bed awake and in good condition, complaining of head ache. Two or three minutes later, after the usua interval, another convulsion occurred. Later during th day 0.1 Gm. of diphenylhydantoin sodium was given and 10 cc. of 10 per cent solution of calcium gluconat was injected intravenously. The patient was anesthet ized with ether, which had only a short effect. Th convulsions continued, and chloroform was administere by the anesthetist. One-tenth gram of sodium amyta was then given intramuscularly. At 5 a. m. October 1 0.23 Gm. of sodium amytal was given intravenously. The convulsions continued at short intervals. Ether kept the patient asleep for about thirty minutes but did not stop the convulsions. One hundred and seventy convulsive seizures occurred in twenty-four hours. The temperature had risen to 106.4 F. (rectal), and tepid sponges, ice packs and cooling enemas were used. Two hundred cubic centimeters of 10 per cent solution of dextrose in isotonic solution of sodium chloride was given intravenously. Codeine, 0.065 Gm., was given subcutaneously and 0.1 Gm. of phenobarbital orally. Two grams of chloral hydrate was administered in a starch enema. Chloroform was administered again by the anesthetist. Three ampules (0.375 Gm.) of sodium amytal were given intravenously. The patient

*Formerly chief resident, Milwaukee Children's Hospital.

as almost exhausted. The convulsions were four or e minutes apart; the temperature ranged between 99 d 106 F. (rectal), and the blood pressure was 128 m. systolic and 72 diastolic. On October 13, 0.00065 m. of scopolamine hydrobromide was given every ur hours, and solution of tribromoethanol U. S. P. as given by rectum after another attempt to produce nesthesia with chloroform and with ether. The con-lsions continued. Twenty-four cubic centimeters of raldehyde and 24 cc. of liquid petrolatum were given ctally. The patient gradually went into a state of haustion. The convulsions decreased and became less vere. The pupils were fixed; the pulse rate went to 160, and the pressure decreased. At times there as Cheyne-Stokes respiration. On the morning of ctober 14 the pulse became still weaker; the respira-ons were 40 per minute and deep. The hands and et became cold and the skin mottled. The patient ppeared to be dying. The convulsions ceased com-etely, and the patient died at 10: 46 a. m., October 14. he terminal temperature was 107.4 F. (rectal).

A necropsy was performed two and one-half hours ost mortem by Dr. G. H. Hansmann. He reported at the conditions were essentially normal except for e following: "The right side of the heart was greatly ilated, and the microscopic section revealed edema. he liver weighed 1,750 Gm., and the cut section was ale and appeared to contain no cloudy swelling. licroscopically, fatty degeneration of the periphery of e lobules was found, and all other cells of the liver evealed fatty degeneration of lesser extent. The spleen as congested. The brain weighed 1,320 Gm., and the ins stood out as somewhat dilated and engorged essels containing unusually dark blood. The brain as symmetric, which would indicate that there was o internal lesion. The meninges were searched for ars, for evidence of a point of initiation of the pasms; but none was found. Microscopic examina-on of the brain revealed areas of acute edema. The nerve cells were triangular and elongated. The nerve processes could be traced for a considerable distance, and there was no evidence of an inflammatory reaction. Examination of other sections of the brain revealed petechial hemorrhages and small cavities throughout the white matter, particularly in the region of the internal capsule. The cavities measured up to 2 mm. in diameter. There were no other gross abnormalities. Microscopic examination of the sections revealed small cysts and congestion of some of the vessels. Other vessels were collapsed, and the Virchow-Robin spaces were large and filled with blood. This condition was particularly prominent in the region of the internal capsule and midbrain and was taken to indicate cerebral anoxia."

SUMMARY

A 12 year old girl in excellent physical condition except for idiopathic epilepsy died of exhaustion after ketosis had developed. The ketosis was counteracted with no effect. The following drugs, listed in order of their administration, produced no effect on the convulsions: phenobarbital (orally and subcutaneously), diphenylhydantoin sodium (orally), magnesium sulfate (orally, intramuscularly and rectally), calcium gluconate (intravenously), vinyl ether (inhalation), sodium amytal (intramuscularly and intravenously), chloral hydrate (rectally), ether (inhalation), codeine (subcutaneously), chloroform (inhalation), tribromoethanol (rectally), scopolamine hydrobromide (subcutaneously) and paraldehyde (rectally).

Milwaukee Children's Hospital, Milwaukee.
Children's Memorial Hospital, Chicago.

Progress in Pediatrics

POLIOMYELITIS

III. ANALYSIS OF RESULTS FOLLOWING TREATMENT AS REPORTED IN THE RECENT LITERATURE

JOHN A. TOOMEY, M.D., AND PAUL M. KOHN, M.D.
CLEVELAND

In a previous communication [1] we analyzed the results obtained in a series of patients with poliomyelitis treated according to the Toomey-Feiss method. The reader is referred to that article for the classification of types, statuses and substatuses or conditions. In the present review we shall try to analyze, in comparable fashion, the results obtained in other clinics in which different methods of treatment were employed. Some reports do not include adequate facts, and comparison is therefore impossible. In such instances only our impression can be given.

KENNY TREATMENT

Cases Reported by Pohl.—The first series of cases in the United States in which the Kenny treatment was used was described by Pohl in 1942.[2] Since that time no other cases have been described in detail from the poliomyelitis clinic of the Minneapolis General Hospital, to our knowledge, although mention has been made of 28 more cases. The conditions in the spinal fluid were not mentioned in the report on the original series of 26 cases.

In an analysis of the results reported by Pohl, cases 2, 16 and 20, in which there was no paralysis, can be excluded, since the patients should have recovered with little or no treatment. In case 13 treatment might not have been needed. The 2 cases of bulbar poliomyelitis (cases 10 and 24) should also be excluded; it would be a rash person indeed who would claim that external treatment affected the bulbar nerves. We included case 8, although in our service a detailed neurologic examination would have been performed before the patient was accepted as having poliomyelitis, especially since his symptoms fit toxic neuronitis so well.

Of the 26 patients described by Pohl, 3 were in group 4 and 2 in group 5D alpha. These patients required no treatment in order to recover satisfactorily. Of the other 21 patients, for whom treatment might have influenced recovery, 5 (23.8 per cent) were completely cured. If the 2 patients in 5D alpha are included, 7 of 23 patients (30.4 per cent) were completely cured.

TABLE 1.—*Classification of Pohl's Patients Treated by the Kenny Method*

No.	Group	Status Before	Status After	No.	Group	Status Before	Status After
1	5 B	IV	III	14	5 B	III	III A
2	4	I	I	15	5 B	III	III C
3	5 B	IV	IV A	16	4	I	I
4	5 D beta	III	I	17	5 B	IV	IV B
5	5 C	IV	III	18	5 B	III	III B
6	5 B	IV	III	19	5 B	III	III A
7	5 B	IV	III	20	4	I	I
8	5 B	IV	I	21	5 B	III	III A
9	5 B	III	III C	22	5 B	II	I
10	5 D alpha	III	I	23	5 B	III	II
11	5 B	III	III B	24	5 D alpha	III	I
12	5 A	II	I	25	5 B	IV	IV B
13	5 E alpha	II	I	26	5 C	III	III C

Five of the 21 patients (23.8 per cent) advanced one or more statuses. Ten (47.6 per cent) of the 21 patients who required treatment were cured or advanced one or more statuses. Of the 11 patients who did not improve at least one status, 4 (36.3 per cent) improved to condition A, 4 (36.3 per cent) to condition B and 3 (27.3 per cent) to condition C. None failed to show improvement.

Analyzing the data by groups and statuses, we find the following distribution:

Classification Before Treatment: Group	Classification Before Treatment: Status	Number of Patients	Classification After Treatment: Status
4	I	3	I
5 A	II	1	I
5 B	II	1	I
	III	1	II
		3	III A
		2	III B
		2	III C
	IV	1	I
		3	III
		1	IV A
		2	IV B
5 C	III	1	III C
	IV	1	III
5 D alpha	III	2	I
5 D beta	III	1	I
5 E alpha	II	1	I

From the Department of Contagious Diseases, City Hospital and the Department of Pediatrics Western Reserve University.

1. Toomey, J. A., and Kohn, P. M.: Poliomyelitis: II. Results of Treatment During the Acute Stages of the Disease, Am. J. Dis. Child. **67**:393-399 (May) 1944.

2. Pohl, J. F.: Kenny Treatment of Anterior Poliomyelitis (Infantile Paralysis): Report of First Cases Treated in America, J. A. M. A. **118**:1428-1433 (April 25) 1942.

If the 3 nonparalytic patients (group 4) and the 2 in group 5D alpha who improved to status I are added to the 5 who recovered completely, 10 of 26 (38.4 per cent) were completely cured.

The results are good. Statistical analyses do not reflect subjective well-being and degrees of passive mobility. One must agree with Pohl that to appreciate these the patients should be seen.

Cases Reported by Daly and His Associates.—Daly, Greenbaum, Reilly, Weiss and Stimson [3] attempted to evaluate the Kenny method in the early treatment of poliomyelitis. Of 71 patients admitted to the Willard Parker Hospital in New York during the epidemic of 1941, 43 were treated by so-called orthodox methods and 28 by the Kenny method.

Results of Treatment by Orthodox Methods.—Forty-three patients with spinal poliomyelitis admitted to the Willard Parker Hospital between Aug. 8 and Sept. 23, 1941 were treated by so-called orthodox methods. A detailed analysis of the involvement of muscles was not reported, and loss of function rather than muscular involvement was stressed. Nevertheless, it was felt that the description was sufficiently clear to classify patients according to our schema.

Daly and her associates stated that at the present time only symptomatic treatment is indicated for early poliomyelitis, a sweeping conclusion which is not justified by our experience during the past twenty-two years. Statements to the effect that patients with bulbar paralysis respond well to treatment cannot be accepted at face value in view of the fact that there has been a gradual but steady increase in the number of patients with bulbar symptoms and a decrease in the mortality in this group in recent years. Improvement in bulbar paralysis has nothing whatever to do with treatment.

Fifteen patients had no follow-up examinations. Nine of them were in group 5B; 1 was in group 5C; 2 were in group 4, and 3 were in group 5D alpha. In addition, there were 5 patients in group 4, 1 in group 2 and 4 in group 5D alpha. In all there were 10 patients who did not require actual treatment for a satisfactory recovery. Thus 25 of the 43 cases could not be considered in an evaluation of any treatment.

Of 18 patients who required treatment and for whom follow-up examinations were performed, none were completely cured. Three of the 5 patients in group 4 and 1 patient in group 2 (66.6 per cent) had residual spasm or spinal curvature. One (5.5 per cent) of the 18 patients improved one status. However, this patient, who was in group 5B and improved from status IV to III, had a residual contracture. Seventeen of the 18 patients considered in the evaluation of treatment did not improve enough to reach another status; nevertheless, some improvement occurred. Three patients (17.6 per cent) improved to condition A, 3 (17.6 per cent) improved to condition B and 2 (11.8 per cent) improved to condition C. Nine patients (52.8 per cent) showed no improvement.

Analyzing the data by groups and statuses, we find the following distribution:

Classification Before Treatment		Number of Patients	Classification After Treatment, Status
Group	Status		
2	I	1	I (residual spasm)
4	I	5	I (residual spasm in 3)
5 D alpha	II	1	II B
	III	2	III A
		1	III B
5 D beta	III	1	III A (residual spasm)
		1	III C
5 B	III	2	III A
		2	III B
		1	III C
		7	III
	IV	1	III
		2	IV
5 C	V	1	V A

If the nonparalytic patients (groups 2 and 4) and the patients with bulbar poliomyelitis (group 5D alpha) are included, the total number considered is 28. Of these only 2 patients (7.1 per cent), who were in group 4, were discharged as completely cured.

TABLE 2.—*Classification of Daly's Patients Treated by the Orthodox Method*

		Status				Status	
No.	Group	Before	After	No.	Group	Before	After
1	5 D alpha	II	II B	23	5 B	III	NF
2	4	I	I	24	5 B	III	III B
3	5 D beta	III	III C	25	5 B	III	III
4	4	I	I	26	5 B	III	III
5	4	I	I(s)*	27	5 B	III	III
6	4	I	I(s)	28	5 B	III	III
7	4	I	I(s)	29	5 B	IV	IV
8	2	I	I(s)	30	5 B	III	III
9	4	I	NF†	31	5 B	III	NF
10	4	I	NF	32	5 C	V	V A
11	5 D alpha	III	NF	33	5 B	III	NF
12	5 D alpha	III	NF	34	5 B	IV	NF
13	5 D alpha	III	III A	35	5 B	III	III
14	5 D alpha	III	III B	36	5 C	IV	NF
15	5 D alpha	III	III A	37	5 B	IV	NF
16	5 D alpha	III	NF	38	5 B	IV	NF
17	5 D beta	III	III A (s)	39	5 B	IV	NF
18	5 B	III	III A	40	5 B	III	NF
19	5 B	III	III B	41	5 B	III	III
20	5 B	III	III C	42	5 B	III	NF
21	5 B	IV	III	43	5 B	IV	IV
22	5 B	III	III A				

* (s) indicates residual spasm or spinal curvature.
† NF indicates that the patient was not followed up.

3. Daly, M. M. I.; Greenbaum, J.; Reilly, E. T.; Weiss, A. M., and Stimson, P. M.: Early Treatment of Poliomyelitis with Evaluation of Sister Kenny Treatment, J. A. M. A. **118**:1433-1443 (April 25) 1942.

Results of Treatment by the Kenny Method.—Of the 28 patients treated by the Kenny method, there were 2 in group 4 and 5 in group 5D alpha, 7 in all for whom treatment was unnecessary. This leaves 21 patients whose progress could be evaluated. Only 1 patient (4.7 per cent) was completely cured. Three others (14.3 per cent) advanced at least one status. If these are combined, there were 4 patients (19.0 per cent) who advanced one or more statuses. Of the 17 patients who did not advance one status, 4 (23.4 per cent) improved to condition A, 11 (64.9 per cent) improved to condition B and 2 (11.7 per cent) improved to condition C.

Analyzing the data by groups and statuses we find the following distribution:

Classification Before Treatment		Number of Patients	Classification After Treatment, Status
Group	Status		
4	I	2	I
5 D alpha	III	4	III B
		1	III C
5 D beta	III	1	II
		2	III B
		1	III C
5 A	III	1	II
5 C	III	2	III B
	IV	1	IV B
5 B	III	1	I
		1	II
		2	III A
		4	III B
		1	III C
	IV	2	IV A
		2	IV B

If the 2 patients with nonparalytic poliomyelitis (group 4) and the 5 with bulbar poliomyelitis (group 5D alpha) are included in the computations, there are 28 patients to be considered. Of these only 2 patients in group 4 and 1 in group 5B were discharged as cured (10.7 per cent).

TABLE 3.—*Classification of Daly's Patients Treated by the Kenny Method*

		Status				Status	
No.	Group	Before	After	No.	Group	Before	After
44	4	I	I	58	5 B	III	III A
45	4	I	I	59	5 A	III	II
46	5 D alpha	III	III B	60	5 B	III	III B
47	5 D alpha	III	III B	61	5 B	IV	IV B
48	5 D alpha	III	III C	62	5 B	III	III B
49	5 D alpha	III	III B	63	5 B	III	III B
50	5 D alpha	III	III B	64	5 B	III	III A
51	5 D beta	III	III B	65	5 B	III	I
52	5 D beta	III	III B	66	5 C	IV	IV B
53	5 D beta	III	III C	67	5 B	IV	IV A
54	5 D beta	III	II	68	5 B	IV	IV A
55	5 C	III	III B(s)*	69	5 C	III	III B
56	5 B	III	II	70	5 B	IV	IV B
57	5 B	III	III C	71	5 B	III	III B

* (s) indicates residual spasm or spinal curvature.

Cases Reported by Coon.—Coon [4] reported that 8 patients ranging in age from 2 months to 17 years were treated according to the Ken method with the assistance of Kenny-trai personnel at South View Hospital in Milwauk Three of the 8 (37 per cent) left the hosp completely cured. The other patients had deformities, although they had slight muscu weakness and some residual paralysis. T results, in the opinion of Dr. Fox, medi director of the hospital, were most encouragi At the Wisconsin General Hospital in Madis 21 patients were treated, 3 of whom died bulbar poliomyelitis. Fourteen of the 21 (per cent) were discharged from the hosp with definite improvement.

We could not compare the results repor by Coon with those of other investigators, sin no information was given about the exact co dition of the patients before treatment w started. The types of disease were not defin and the exact amount of improvement prese when the patients left the hospital was not ind cated. There were no detailed reports of cas

Cases Reported by Wilder.—Wilder [5] treate 40 patients by the Kenny method; 10 (25 p cent) were discharged as normal within a average of 29.2 days, and 1 died. Eleven of th patients who remained in the hospital at the tim of the report were up and walking, and the oth 18 were progressing satisfactorily. Only 1 pa tient needed braces. Wilder stated that a larg percentage of the patients previously treated b him by other methods needed braces, but he gav no descriptive evidence to substantiate the stat ment.

The report illustrates the fact that unless th types of patients treated are thoroughly describe an analysis cannot determine how much credi should be given a treatment used. It is un fortunate that the statistics were not given i more detail, since they seemed to denote a trend

Cases Reported by Dyson.—Dyson [6] describe the results of treatment of 39 patients by th Kenny method. He stated that most of th patients did not have severe poliomyelitis. Only 2 were bedridden, and many had no definite weakness, having had only spasm of the muscles of the neck and back and of the hamstring muscles. Such a condition is present with any meningeal irritation and disappears automatically in due time without treatment, although in our opinion recovery may be hastened by early

4. Coon, H. M.: Wisconsin Experience with Kenny Treatment Methods, Wisconsin M. J. **42**:783-784 (Aug.) 1943.

5. Wilder, M. J.; Kenny Treatment of Poliomyelitis, Kentucky M. J. **41**:45-47 (Feb.) 1943.

6. Dyson, J. E.; Kenny Treatment in Acute Poliomyelitis: Report of First Year at Iowa Lutheran Kenny Cottage, J. Iowa M. Soc. **33**:375-379 (Aug.) 1943.

ysical therapy. One patient died. Analysis he statistics was complicated by the fact that atients had roentgen therapy. In analyzing istics relating to recovery from poliomyelitis, en it is noted that 28 patients, nearly 72 per t of the series, became completely well one st bear in mind that most of the patients may e had only so-called muscular spasm and the ated symptoms of meningeal irritation.

In Dyson's experience spasm was persistent pite treatment; 4 of the patients who became in 1940 were still spastic when the article was itten, in 1943.

The author made a significant statement which uld be borne in mind, that is, that "over-ivity has brought back muscle spasms and nged functions of arms, backs and legs in ne who thought they were well." No com-nt is necessary. One may ask whether mus-ar power and function should not have been ted and splinting done if necessary.

The length of time spent in the hospital did not rallel the duration of the attack.

It was impossible to analyze the cases accord-g to our classification, since the percentage of uscular movement was not stated. Nevertheless, a rough attempt was made. If we designate e patients by number in the order in which ey are listed in Dyson's master table, patients 4, 6, 8, 9, 11 and 16 probably belonged in our oups 1 to 4 and patients 2, 3, 5, 10, 12, 13, 14, , 21, 23, 24, 25, 26, 27, 28, 35 and 36 probably longed in our group 5A (patients with fleeting eakness in various groups of muscles, who cover with a minimum of physical therapy). atients 7, 15, 18, 19, 20, 22, 29 and 30 and ssibly 31, 32, 34, 37, 38 and 39 probably be-nged in our group 5B; as nearly as we were le to determine, they were not completely well the time the report was issued.

If 28, or 71 per cent, of 39 patients were com-etely well, as claimed by the author in the body the paper, how can one account for the fact at those listed above as belonging in group 5B ill had the conditions described in the table? robably the author had in mind functional re-overy. It is unfortunate that these statistics uld not be analyzed, for there seems to have en distinct improvement after treatment.

Cases Reported by Bingham.—Bingham [7] in a onograph reported the results for 48 patients eated by the Kenny method. He did not esent the cases in detail, and the data cannot be analyzed. We felt, however, that the evidence was sufficient to show that the patients had neither contractions nor deformities after the treatment. We cannot tell how quickly the patient progressed or the status of the residual weakness.

Bingham probably referred to the same 48 patients in a subsequent article.[8] Although the patients seemed significantly better, the author stated that final conclusions on the merit of the new treatment should be determined from the amount of paralysis and deformity in the years to come. The author also recognizes the fact that some improvement, rather than being due to the Kenny treatment, might have been due to the fact that the patients had mild abortive poliomyelitis and would have recovered anyway. Bingham should have mentioned whether deformities and contractions developed during treatment, especially in patients for whom the Kenny therapy was employed, since a cardinal point has been made that no deformities or contractions develop in patients who receive this treatment.

Cases Reported by Stuck and Loiselle.—From the San Antonio epidemic of 1942, 87 cases were described by Stuck and Loiselle.[9] Routine spinal punctures were not made in all instances, because, as the authors stated, the diagnosis was sufficiently clear to eliminate the necessity of such a procedure and in patients with stiff backs spinal puncture was too painful. It is dangerous to adopt such criteria. In all probability some of the patients with symptoms had the disease; but because so many other infections can be mistaken for abortive poliomyelitis and because the effect of a therapeutic procedure was to be determined, the authors should have proved their diagnoses beyond a doubt.

Stuck and Loiselle also stated that nearly all patients with bulbar poliomyelitis died despite the use of a respirator. These are the very conditions under which the use of a respirator is contraindicated unless the patient has concomitant paralysis of the intercostal muscles and the diaphragm. A respirator cannot be expected to benefit a patient with bulbar poliomyelitis; in fact, it aggravates his condition.

It is difficult to analyze the statements of Stuck and Loiselle. They did not describe the amount of paresis or paralysis the patients had before they were treated. They stated that 2 patients who were not treated showed contraction. This has been the experience of every one.

7. Bingham, R.: Kenny Treatment for Infantile aralysis: Comparison of Results with Those of Older ethods of Treatment, J. Bone & Joint Surg. **25**:647-50 (July) 1943.

8. Bingham, R.: Unpublished monograph.

9. Stuck, W. G., and Loiselle, A. O.: The 1942 San Antonio Poliomyelitis Epidemic, J. A. M. A. **122**:853-855 (July 24) 1943.

It is not known whether the 2 patients with polyneuritic paralysis had painful neuritis only; but, taking for granted that this was so, the data for 33 patients in all, 25 with abortive poliomyelitis, 6 who died and 2 who had polyneuritis, would have to be excluded from consideration of the value of the therapy. If the 2 patients with polyneuritis are included, there were 56 patients who needed treatment. The data presented show that at the end of a course of treatment 29 patients (52 per cent) had moderate or severe residual weakness.

Cases Reported by Kabat and Knapp.—Kabat and Knapp[10] described the results obtained by the Kenny treatment with the administration of neostigmine. The authors based the justification of the use of neostigmine on the stretch reflex; they stated the belief that in persons with poliomyelitis the trigger mechanism is probably set at a lower level than normal. This seems a reasonable conception, and that such a lowered threshold could persist in muscles of most patients for months seems logical.

Was there any striking modification of the clinical conditions? After analyzing the data, it was difficult for us to conclude just what the condition of some patients was at the end of the period of observation.

The authors stated that in patient 4 there was no change in the triceps muscle (previously described as spastic) and then that the administration of neostigmine accelerated recovery. Phrases such as "stepped up recovery" and "accelerated recovery" are used despite the fact that none of the 20 patients were cured. All these terms are relative. There were no controls for comparison and all of the patients had some residual paralysis at the end of the period of observation.

We should classify case 5 in group 4 C. Recovery was good, though no mention was made as to whether the leg had recovered. It could hardly be admitted that in case 7 the fine degree of difference in mobility mentioned would be of much importance, since such differences occur from day to day. There was limitation of motion in case 8, although no paralysis was mentioned. From the descriptions we assume, however, that it probably was present in this case and in case 9.

It took patient 10 six weeks and patient 13 eight weeks to achieve the improvement which is claimed. One patient (case 19) resembled one of our patients, who still remained bedridden, though every treatment was tried.

10. Kabat, H., and Knapp, M. E.: Use of Prostigmine in Treatment of Poliomyelitis, J. A. M. A. **122:** 989-995 (Aug. 7) 1943.

We cannot understand what is meant by considerable increase in active motion" in report on case 2 or by the statement that covery appeared to be more rapid" in the re on case 3.

The authors stated that flexion deformi that had been present for six months disappea completely within one hour after the injection neostigmine. One could accept the fact that th was spasticity of muscles which would be a pot tial cause of an ultimate deformity, but it see incredible that the recovery could be immedi if the deformity had already appeared. The e dence presented does not show an effect recovery other than that which could have b obtained by the use of hot packs or any oth early treatment. We should have wanted a co sultation with a neurologist in case 3, but for t record we accept the conclusions of the autho

TABLE 4.—*Classification of Kabat and Knapp's Patie Treated by the Kenny Method and with Prostigmin*

		Status				Status	
No.	Group	Before	After	No.	Group	Before	Aft
1	5 B	III	II	11	5 B	II	II A
2	5 B	III	III B	12	5 B	III	III
3	5 B	III	III A	13	5 B	V	IV
4	5 B	IV	IV B	14	5 B	IV	IV A
5	5 B	IV	IV C	15	5 B	IV	IV
6	5 B	IV	IV C	16	5 B	IV	IV
7	5 B	III	III B	17	5 B	III	III
8	5 B	III	III A	18	5 B	V	IV
9	5 B	III	III A	19	5 B	V	V
10	5 B	III	III A	20	5 B	III	III

Evidence that hypertonus or muscular spas was decreased is indefinite. It is not our im pression that Kabat and Knapp demonstrat that an effect was obtained by the use of ne stigmine.

There were 20 patients, all of whom were group 5 B and hence were considered in th analysis. None were completely cured. Thr patients (15 per cent) advanced one status. the 17 patients who did not advance one statu 8 (46.4 per cent) improved to substatus A, (29.4 per cent) improved to substatus B an 2 (11.7 per cent) improved to substatus C. Tw patients (11.7 per cent) showed no improvemen

Analyzing the data by groups and statuses w find the following distribution:

Classification Before Treatment		Number of Patients	Classification After Treatment
Group	Status		Status
5 B	II	1	II A
	III	1	II
		6	III A
		2	III B
		1	III
	IV	1	IV A
		3	IV B
		2	IV C
	V	2	IV
		1	V

Cases Reported by Kenny.—Kenny [11] refers 84 patients treated by her method but gives no ails to support the statements and conclusions de.

ORTHODOX TREATMENT

In a recent epidemic in Canada, of 167 patients whom the orthodox method of treatment was ed, 82.2 per cent recovered normal or almost rmal function. In the 1941 epidemic in Ala- na, of 120 patients treated in the same way, per cent were normal or practically normal.[12]

Cases Reported by Lenhard.—Lenhard de- ibed the results obtained by him during the demic which occurred in Maryland in 1941.[13] stated that in the treatment of his patients t of paralyzed muscles was emphasized but t rest did not constitute complete immobili- ion. However, the statement that "rest did t constitute complete immobilization" is not ar in the light of the next statement to the ect that the extremities were supported in ster shells, wire splints or braces which owed relaxation of weaker muscles. Our inter- etation was that the patient was not put in a t with the muscles in a neutral position and n forgotten but that he was put in some con- vance that rested him but at the same time owed frequent movement and early applica- n of physical therapy. The patient's body was xed slightly in bed or on a curved frame to event stretching of the abdominal muscles. diant heat was used for the stimulation of culation, and massage was given as soon as reness had disappeared. Passive movement of nts was carried out in a restricted range in ect ratio to the amount of muscular weakness. xercises, consisting of assistive motion, were gun early, and their extent was increased as muscles showed recovery. Other than the rly use of appliances, the treatment was not like ours.

The statistics are interesting; the results were cellent and the report was well prepared. owever, it is impossible to make definite com- risons of therapy, because the status of the tients before treatment is not described. It is r guess, however, that the results were as good any reported. Lenhard's patients with "no paralysis" probably correspond to our nonparalytic group; this group constitutes 18 per cent of his series and 19 per cent of ours. Ninety-six of Lenhard's patients (34 per cent) recovered completely, as compared with 39.7 per cent of ours. Forty-seven patients (16 per cent) were probably normal; 40 (14 per cent) had slight residual weakness; 32 (11 per cent) had moderate residual weakness; 14 (5 per cent) had great residual weakness, and 6 (2 per cent) had complete residual weakness. Of his 296 patients 9 (3.0 per cent) died. Seventeen (7.5 per cent) of our patients died.

The author presents a chart showing the number of times the muscles were examined and the results. His key to the grading of muscular function emphasizes the proper points. The rating of 95 to 100 per cent corresponds to our "completely normal," 70 to 90 per cent to status II, 40 to 60 per cent to status III, 10 to 40 per cent to status IV and 0 to 10 per cent to status V. We might not agree with him as to what constituted "complete" recovery and normal muscular function. We believe that a patient who requires stabilization has more than merely "slight residual weakness," since we infer that he had a permanent complication, perhaps even an ankylosing deformity. Unfortunately, the initial conditions of the patients were not described. Two per cent of the patients had complete residual weakness; that is, they were confined to wheel chairs. The incidence is almost the same as in our series (1.7 per cent).

Lenhard proves that the type of immobilization employed by him does not harm the patient. We agree with his conclusion that muscles do not improve in direct ratio to the degree of initial weakness and that they may continue to improve for eighteen months or more when patients are treated immediately after the onset of poliomyelitis. We agree also that even in patients seen a long time after the disease has started the muscles may improve if treated. Lenhard was aware that some patients get well spontaneously, but he made no mention of the fact.

Evaluation of the strength of individual muscles when divorced from the condition of the patient as a whole does not reveal information of value in judging results. However, such an analysis would probably be more valuable if the relative times of recovery of the various muscles could be compared.

Cases Reported by McCarroll and Crego.—McCarroll and Crego [14] reported on 245 patients

11. Kenny, E.: Infantile Paralysis: Importance of reatment in the Acute Stage, New York State J. Med. :1645 (Sept. 1) 1942.

12. Key, J. A.: Kenny Versus Orthodox Treatment Anterior Poliomyelitis, Surgery **14**:20-31 (July) 43.

13. Lenhard, R. E.: Results of Poliomyelitis in ltimore, J. Bone & Joint Surg. **25**:132-141 (Jan.) 43.

14. McCarroll, H. R., and Crego, C. H., Jr.: Evaluation of Physiotherapy in Early Treatment of Anterior Poliomyelitis, J. Bone & Joint Surg. **23**:851-861 (Oct.) 1941.

treated from 1935 to 1941 inclusive. The total number of extremities involved was 487. We were unable to determine the initial condition of the patients and hence could not classify them for comparison.

McCarroll and Crego took patients after the contagious or acute stage of the infection was over and treated only those who were frankly paretic or paralyzed. They did not bolster their statistics of recovery with cases of nonparalytic, abortive and bulbar poliomyelitis.

Twenty-seven per cent of the extremities with initial complete or partial paralysis recovered normal function. What this would mean in terms of the patient as a whole is unknown; if anywhere near 27 per cent of the patients made complete recoveries, the results would be as good as any reported in the literature.

McCarroll and Crego stated that the initial paralysis of poliomyelitis may be due to blockage of the pyramidal tracts by localized edema or related conditions, without destruction of ganglion cells. The statement is interesting and intriguing, and the mechanism suggested is perhaps not impossible; but one wonders about the qualifying phrase "without destruction of ganglion cells." If cells of the anterior horn were not destroyed, there would be no paralysis. If the hypothesis were correct, there would be only disturbance of reciprocal innervation and spasticity. Probably the authors meant that horn cells might be simultaneously edematous and that a condition similar to spinal block was present. It is certain that pathologic changes may be found throughout the spinal cord, changes which do not parallel the symptoms.

One must agree with the authors when they state that physical therapy may not be the answer to all the problems in this disease and that control will probably be accomplished through prevention.

Report by Key.—Key [12] recently considered the points for and against the orthodox treatment and the Kenny treatment of poliomyelitis. The author described orthodox treatment as the application of splints or casts, which are removed twice daily, and the passive, not active, movement of the major joints through an arc of tolerance, pain being the brake. Splints are used only when needed, not in all cases or on all extremities.

Key used warm salt baths, hot packs or dry heat to induce vascular dilatation and started massage and training of muscles when tenderness disappeared. The patients were examined monthly, and Key noted that this is a neces because occasional paralysis of certain mus may be missed and become evident only as goes on. He corrected contraction by gra stretching during the convalescent stage, an stated that this condition does not recur. experience with stretching has been similar most instances, although we have had failures

Key mentioned variations of the ortho method, such as under-water therapy, emplo at Warm Springs, Ga., or prolonged splint as advocated by the Kendalls. He emplo careful training of muscles. When plaster c were applied for a few weeks, he removed t two or three times daily. He kept the patie absolutely quiet for a few days during the feb stage. We agree that under the guidance o properly trained person such methods achieve good results, but we believe that no ha is done to the patient when casts are left on a few weeks and then removed and physi therapy started. We do not believe that it been proved definitely that such procedures not constitute good treatment, or that the u mate results would not have been the same w some other method followed. Our proced would vary in only one detail. From our ex rience in treating poliomyelitis for over twe years, we know that fixed casts unnecessar applied, especially if allowed to remain too lo are harmful. In instances in which Key wo probably immobilize with splints, we should u sandbags, which in truth are also splints.

Key stated that the Kenny method does n protect paralyzed muscles from stretching wh the orthodox method does, and he denied t claim that the Kenny treatment prevents lessens paralysis. He added that the lay pr credits the Kenny method with remarkable cur and makes extravagant promises of cure Physicians must avoid publicity and are mo guarded in their prognoses. A physician h to prove his statements before a critical audien of persons who know something about t disease.

Key also stated (1) that deformities do occ in patients treated by the Kenny method, that many patients treated by the Kenny meth will be handicapped because of the lack of splint which would enable them to use their paraly limbs more efficiently, (3) that the Kenny trea ment is laborious and messy and demands a rel tively large number of specially trained tech cians for a given number of patients and (4) th the Kenny method is rigid and cannot be us effectively in an epidemic of any magnitud

pointed out that the orthodox treatment is tic and has weathered many epidemics and poliomyelitis is an epidemic disease.

Cases Reported by Sherman.—Sherman [15] cribed the results of treatment at the Univer- of Chicago of 70 patients during the epidemic 1943. The patients were given supportive rapy only, and the disease was allowed to run natural course. The results were excellent. fortunately, exact comparisons cannot be le, since the condition of the patients was described.

TREATMENT WITH VITAMINS AND ARTIFICIAL FEVER

Cases Reported by Stone.—To treat infantile alysis Stone [16] used a combination of artificial er, thiamine hydrochloride and vitamins B E. He administered the thiamine intra- ously or intramuscularly during the height of fever. The average number of treatments four, although 1 child received seven intra- scular and four intraspinal doses. As the ients progressed vitamin B complex and min E were given orally.

BLE 5.—*Classification of Stone's Patients Treated with Artificial Fever and Vitamins*

	Status				Status	
Group	Before	After	No.	Group	Before	After
5 B	III	III C	7	5 B	IV	III
5 B	III	III C	8	5 B	III	III C
5 B	III	III C	9	5 B	V	I
5 B	III	III C	10	5 B	III	I
5 B	III	III C	11	5 B	III	III C
5 D beta	III	III C				

The exact meaning of the term "fibrosis" used Stone in his report on cases 9 and 11 is not ar. It is probably an error, for it is difficult understand how the patient could recover if neral fibrosis, which implies destruction of renchymatous tissue with replacement by con- tive tissue, had been present. It may be, how- r, that there was so much hypertrophy of the maining muscular tissue that the previously minent fibrosis was obscured.

The patients treated by Stone were of the type ut which physicians want to know more; that they all had obvious paralysis.

15. Sherman, M. S.: The Natural Course of Polio- elitis, J. A. M. A. **125**:99 (May 13) 1944.

16. Stone, S.: Artificial Fever and Vitamin Therapy Treatment of Anterior Poliomyelitis: Report on raspinal Administration of Thiamine Chloride Com- ed with Artificial Fever Therapy, Arch. Phys. erapy **24**:350-361 (June) 1943.

All of Stone's 11 patients are considered in this analysis since ten were in group 5B and 1 in group 5D beta. Two patients (18.1 per cent) were completely cured. One patient (9.1 per cent) advanced one status, making 3 (27.2 per cent) who advanced at least one status. The 8 patients who did not advance one status improved to substatus C.

Analyzing the data by groups and statuses, we find the following distribution:

Classification Before Treatment		Number of Patients	Classification After Treatment, Status
Groups	Status		
5 B	III	1	I
		7	III C
	IV	1	III
	V	1	I
5 D beta	III	1	III C

COMMENT

Table 6 was constructed from the data in six recent reports in the literature to present a comparison of the results. The statistics for the Toomey-Feiss method were derived from our series of 226 cases in the 1941 epidemic.[1]

The percentages of patients who recovered completely after treatment with the Toomey-Feiss, the Pohl-Kenny and the Stone method were about equal.

Advances of one or more statuses were made by 23.8 per cent of the patients treated by the Pohl-Kenny method, 19.5 per cent of our patients, 14.3 per cent of Daly's patients and 15 per cent of Kabat and Knapp's. The patients who advanced one or more statuses plus those who were cured constituted 40.5 per cent of our series (Toomey-Kohn), 47.6 per cent of the group treated by the Pohl-Kenny method, 19 per cent of Daly's series and 27.2 per cent of Stone's.

Only 12.2 per cent of our patients improved to condition A; 36.3 per cent of the patients receiving the Pohl-Kenny treatment and 46.4 per cent of those treated by Kabat and Knapp reached condition A. Such minor improvements, however, may be merely a question of personal opinion and equation, improvement no matter how slight having been included.

The advance to substatus B, which is determined on the basis of positive objective evidence, was achieved by 36.6 per cent of our patients, 36.3 per cent of Pohl's, 17.6 per cent of Daly's patients treated by the orthodox method, 64.9 per cent of Daly's patients treated by the Kenny method and 29.4 per cent of Kabat and Knapp's series. Improvement to condition C was achieved by 37.8 per cent of our patients, 27.4 per cent of the Pohl-Kenny series, 11.8 per cent of Daly's control series, 11.7 per cent of the Daly-

Kenny series, 11.7 per cent of the Kabat-Knapp series and 100 per cent of Stone's series.

The incidence of advancement to substatus B in Daly's series (64.9 per cent) seemed relatively higher until we noticed that the percentage for statuses B and C considered together is 76 in their series as compared to 74 in ours. On the other hand, patients in condition C were practically cured, and in this category there were only 11.7 per cent of Daly's group as compared to 37.8 per cent of ours and 27.4 per cent of Pohl's.

The numbers of cases analyzed in the various series were 226 in ours (Toomey and Kohn), 26 in Pohl's (Kenny), 43 in one of Daly's (orthodox) and 28 in the other (Kenny), 20 in Kabat and Knapp's and 11 in Stone's. In regarding the data for all the patients who did not require treatment, especially those with nonparalytic poliomyelitis, those with so-called spasm and nothing else, we have used as a basis of comparison 138 of our cases, 21 of Pohl's, 18 of Daly's first series (orthodox), 21 of Daly's second series (Kenny), 21 of Kabat and Knapp's and 11 of Stone's.

If patients with nonparalytic and bulbar poliomyelitis are included, recovery was complete in 40.6 per cent of our patients, 38.4 per cent of Pohl's, 7.1 per cent of Daly's first series (orthodox), 10.7 per cent of Daly's second series (Kenny) and 18.1 per cent of Stone's and in none of Kabat's patients.

TABLE 6.—*Comparison of the Results in Groups Treated by Various Methods*

	Toomey-Feiss	Pohl-Kenny	Daly Orthodox	Daly-Kenny	Kabat-Knapp	Ston
Patients completely cured, per cent	21.0	23.8	0	4.7	0	18.1
Patients advanced one or more statuses, per cent	19.5	23.8	5.5	14.3	15.0	9.1
Patients advanced one or more statuses or cured, per cent.	40.5	47.6	5.5	19.0	15.0	27.2
Patients improved to condition A, per cent	12.2	36.3	17.6	23.4	46.4	0
Patients improved to condition B, per cent	36.6	36.3	17.6	64.9	29.4	0
Patients improved to condition C, per cent	37.8	27.4	11.8	11.7	11.7	100.0
Patients not improved, per cent	0	0	52.8	0	11.7	0
Number of patients in series	226	26	43	28	20	11
Number of patients considered in evaluation of treatment	138	21	18	21	20	11
Deaths in entire group, per cent	7.5	0	0	0	0	0
Patients completely cured, including those with nonparalytic poliomyelitis and those in groups 5 D alpha and 5 E gamma, per cent	40.6	38.4	7.1	10.7	0	18.1

Obituaries

FREDERIC WILLIAM SCHLUTZ, MD.
1880-1944

rederic William Schlutz, chairman of the de- ment of pediatrics of the University of cago, died on March 8, 1944, at the age of 63. father's family came from Frankfort on the n, Germany. His grandfather came to the ted States in the early part of the last century use of his desire for political freedom.

appointed professor of pediatrics at Minnesota, and in 1930 he was called to the University of Chicago as head of the new Children's Hospital, which was opened at that time. He continued in full service in his specialty until his death.

He was elected to the American Pediatric Society in 1917 and was one of the recognized

FREDERIC WILLIAM SCHLUTZ, M.D.
1880-1944

Dr. Schlutz was born in Greene, Iowa, and ucated at Wartburg College, Clinton, Iowa, d the University of Maryland Medical School. e entered practice at the Mining Hospital in eleth, Minn. After some years he decided to ter the field of children's diseases. To train mself for this specialty he went to Europe in 09. Most of his work was done in Berlin der Professors Czerny and Finkelstein. In 10 he returned to the United States and joined e faculty of the University of Minnesota as in- ructor in biochemistry and in pediatrics. In 13 he returned again to Europe. He steadily vanced in his chosen field. In 1924 he was leaders of his profession in the United States. In 1927 he visited many of the countries of South America and there formed associations which continued, and which grew, throughout his life. He was a member of the White House Conference on Child Health and a member of the Pan-American Committee. It was planned in 1943 that he should go again to South America, as a representative of the United States Department of State, and there for a period of four or five months conduct a series of lectures and teaching clinics.

Dr. Schlutz was a man of great industry. The main interest in his life was his chosen pro-

fession. While in Minneapolis he soon found that he had developed an enormous practice in the diseases of children. The activity in Minnesota which gave him the greatest personal satisfaction was the establishment and development of the Infant Welfare Society in that city.

When he came to the University of Chicago he left the restrictions of an exacting practice to become a member of the full time teaching staff. This gave him freedom for research, and his steady interest in biochemistry led him into a series of investigations which were essentially chemical. Later, this developed into an extensive program directed toward investigation of physical fatigue in young people.

Throughout his life Dr. Schlutz had a driv energy. This quality, coupled with his inhe tance from his Hessian ancestors, made him fi always for what he believed to be right. He w a kindly and generous man and was always eag to assist and to stimulate his students and h associates. It was this quality that made hi active and successful in promoting friendly re tionships between the members of the medi profession in the United States and in Sou America. He was an unusually versatile lingu and a great student of history. His passing h left many friends in the United States, in Euro and in South America with a deep sense of pe sonal loss.

D. B.

Abstracts from Current Literature

Metabolism; Infant Feeding; Milk and Other Foods

CT OF HYPOGLYCEMIA AND ANOXIA ON THE SUR-VAL PERIOD OF INFANT AND ADULT RATS AND ATS. HAROLD E. HIMWICH, JOSEPH F. FAZEKAS d EDMUND HOMBURGER, Endocrinology **33**:96 Aug.) 1943.

has been found in general that newborn animals, l species examined, possess greater resistance to ia than adults, a resistance dependent on the ter capacity of the infant brain to withstand dep-ion of oxygen. Because dextrose, like oxygen, ecessary to cerebral metabolism, the experiments reported were devised to test the relative capacity nfants and adults for resisting hypoglycemia.

is concluded that infant rats survive hypoglycemia er than adults. The factor determining the differ-in the survival period is the ability to maintain function of the brain during hypoglycemia. This city of the infant brain to endure hypoglycemia is ciated with its lower cerebral metabolic require-ts.

he survival period of the anoxic infant, but not of anoxic adult, is prolonged by hyperglycemia. The t cannot obtain sufficient energy from glycolysis to ain the higher rate of cerebral metabolism. Hypo-emia, however, shortens the survival period of ia for both infant and adult rats.

JACOBSEN, Buffalo.

E INTERRELATIONS OF SERUM LIPIDS IN NORMAL PERSONS. JOHN P. PETERS and EVELYN B. MAN, J. Clin. Investigation **22**:707 (Sept.) 1943.

n analysis has been made of a large number of surements of the lipids in the serum of normal ons in the postabsorptive state. In most instances esterol, lipid phosphorus and total fatty acids were sured, which permitted the estimation of free fat by erence. On a few occasions cholesterol partitions e carried out, and more rarely iodine numbers were rmined.

he range of variation of all lipid fractions in the le series was great: from 107 to 320 mg. per hun-d cubic centimeters for cholesterol, from 6.1 to 14.5 per hundred cubic centimeters for lipid phosphorus from 0 to 17.8 milliequivalents per liter for fatty ds of free fat; free fat varied most and lipid phos-rus least. There is no distinction between the serum ds of normal men and women. The serum lipids of se adults and children are indistinguishable from se of normally nourished persons.

he ratio of cholesterol to lipid phosphorus is more stant than either of the functions of which it is posed. The standard deviation of this ratio from mean in this series was only ± 12 per cent. The o tends to vary also directly with the concentration cholesterol.

he ratio of free to total cholesterol is as constant this series as it has been reported by previous ob-vers, varying only from 0.24 to 0.32 with an average 0.28.

The concentration of free fat in the serum is not definitely correlated with that of either cholesterol or lipid phosphorus.

A study of the course and the interrelationships of the lipids in disease should be more informative than single observations of any one of the lipid components.

FROM THE AUTHORS' SUMMARY.

THE EFFECT OF SODIUM CHLORIDE UPON THE DISPOSITION OF INJECTED GLUCOSE IN A STRAIN OF RATS. GEORGE SAYERS, MARION SAYERS and JAMES M. ORTEN, J. Nutrition **26**:139 (Aug.) 1943.

The effect of sodium chloride on the disposition of intraperitoneally injected dextrose was studied in a strain of rats having a low tolerance for dextrose. The use of an 0.85 per cent solution of sodium chloride as an injection medium for the sugar improved the tolerance of these rats, but neither the peritoneal absorption nor the renal excretion of dextrose was affected. The administration of sodium chloride with dextrose favored the deposition of glycogen in both the liver and the rest of the body and simultaneously decreased the "free" sugar in the blood and tissues. The oxidation and conversion to fat of the dextrose appeared to be decreased to a normal level. The sodium chloride improved the low tolerance to dextrose in this strain of rats by increasing the storage of the administered sugar as glycogen.

FREDEEN, Kansas City, Mo.

DIGESTIBILITY OF CERTAIN HIGHER SATURATED FATTY ACIDS AND TRIGLYCERIDES. RALPH HOAGLAND and GEORGE G. SNIDER, J. Nutrition **26**:219 (Sept.) 1943.

Mature male rats were used in these experiments to determine the digestibility of pure stearic, palmitic, myristic and lauric acids and of the corresponding triglycerides. Each fatty acid was mixed in the proportions of 5, 10, 15 and 25 per cent with pure olive oil and each triglyceride in proportions of 5 and 10 per cent. The mixture of fatty acid and olive oil constituted 5 per cent of the diet. The approximate digestive coefficients of stearic acid, which was poorly absorbed at all levels of intake, ranged from 9.4 to 21 per cent. The coefficients for palmitic acid ranged from 23.8 to 39.6 per cent; for myristic and lauric acids the coefficient was practically 100 per cent when the fat mixtures contained 5, 10 or 15 per cent of either acid, but somewhat lower when the mixture contained 25 per cent of the acid. Glyceryl tristearate was poorly utilized; glyceryl tripalmitate was much more digestible than the tristearate; the digestive coefficients were 6 to 8 per cent, and 84 to 82 per cent respectively when the mixtures contained 5 and 10 per cent of the triglyceride. Glyceryl trimyristate and trilaurate were thoroughly absorbed.

FREDEEN, Kansas City, Mo.

DIETARY REQUIREMENTS FOR FERTILITY AND LACTATION. BARNETT SURE, J. Nutrition **26**:275 (Sept.) 1943.

Lactation in the albino rat was favorably influenced to a considerable extent when paraaminobenzoic acid was given. Inositol had a pronounced injurious influence on lactation, which was counteracted by paraaminobenzoic acid.

FREDEEN, Kansas City, Mo.

STREAMLINED INFANT FEEDING. NORMAN W. CLEIN, J. Pediat. **23**:224 (Aug.) 1943.

This report is based on a study of about 3,000 infants over a period of twelve years. The object is to show that most infants at the age of 5 or 6 months can be placed on a schedule of three meals a day. The evaluation of the efficacy of this method of feeding is based primarily on the infant's own tolerance for the diet. His reactions are the sole basis for judgment of the amount of food he requires.

The number of ounces at each feeding is determined by the baby, so that he receives as much as he requires of the formula within a period of about twenty minutes. If the baby receives more and richer foods at a feeding, it is not necessary to feed him so often.

The rate of growth and development of the infant is the chief criterion as to the amount and number of feedings he requires. The age of the infant is of minor importance. The individual development of each infant is also the deciding factor as to when to begin solid foods. Solid foods are added at the following approximate weights: When the infant weighs 10 pounds (4.5 Kg.) add banana and apple sauce; 10 (4.5 Kg.) to 12 pounds (5.4 Kg.), cereals; 12 (5.4 Kg.) to 14 pounds (6.4 Kg.), vegetables and soups; 12 (5.4 Kg.) to 16 pounds (7.3 Kg.), fruits, and 16 (7.3 Kg.) to 18 pounds (8.2 Kg.), meat, fish and cottage cheese. Hard foods, such as toast and bones, are added at the age of 5 to 6 months, as soon as the baby is able to hold things in his hands. All food for a child 6 months old is mashed with a fork (not pureed), whether the infant has teeth or not. Whole, fresh, pasteurized milk is usually added to the diet when the infant weighs 16 pounds (7.3 Kg.) or over.

In the cases analyzed the average age at which a schedule of only four feedings was instituted was 3.1 months, and the average weight at that time was 12.7 pounds (5.8 Kg.). The average weight when the schedule was reduced to three feedings was 18 pounds (8.2 Kg.) and the average age 5.75 months. The average weight at one year was 23.41 pounds (10.6 Kg.) and the average height 30 inches. In a group of 100 babies whose cases were studied in detail, there was less than one infection of the upper respiratory tract to each infant for the entire year and no infections or colds in 43 of the infants. There were only 2 cases of real anorexia. This is the chief reason why fewer feedings are advisable; appetite is created by hunger. An infant can eat larger quantities of food when the intervals between feedings are longer; therefore there is much less anorexia when babies are fed according to this system. There was very little vomiting. Overeating did not occur, as infants will usually stop eating when satisfied. Only 8 infants had diarrhea of a minor degree. Nine had cutaneous eruptions, mild eczemas, which were attributed to food.

The indications for instituting a schedule of four feedings are as follows: (*a*) The weight approaches 10 to 12 pounds (4.5 to 5.4 Kg.), or the age is 3 to 4 months, with weight less than 12 pounds (5.4 Kg.). (*b*) The baby has to be awakened for the 10 p. m. feeding. (*c*) The infant takes large amounts of "formula" at a time. (*d*) Cereals and fruits are added to the diet.

The schedule of three meals a day is instituted: (*a*) When the infant weighs about 17 or 18 pounds (7.7 to 8.2 Kg.), or is 5 or 6 months of age and weighs less than 17 pounds (7.7 Kg.). (*b*) When he sleeps past his 6 a. m. feeding, or does not require much at his 2 p. m. feeding. (*c*) When the infant is receiving cereal, vegetables and fruit in addition to milk. This sch is also used for small babies who do not require amounts of food.

The diets should consist of formulas compose either fresh or canned milk, water and table Any of the cooked or precooked cereals are used fruits and vegetables available to other members o family are given the infants. No specially pre foods of any kind are required. Sterilization of b and nipples is discontinued when the child is 4 m of age and begins to put his hand and other objec his mouth. Vitamin D in the form of cod liver o vitamin concentrates is added at one month of age. synthetic vitamin C is required, as the infant rec the natural vitamins in his food to supply the no requirements.

The infant is just another member of the family is made to fit into the family routine as much as sible. The mother enjoys her infant much more bec she has more time to be with him, as there is l less work for her to do. SHMIGELSKY, Chicag

WHOLE LACTIC ACID EVAPORATED MILK DOES NOT QUIRE A REFRIGERATOR. HARVEY G. TAYLOR ROBERT W. ROBERTS JR., J. Pediat. **23**:307 (Se 1943.

Evaporated whole milk with lactic acid added ca left in open dishes at room temperature for three d before molds are evident and for five days before b teria appear. As the amount of prepared formula m from the usual 13 ounce can of evaporated milk always consumed within forty-eight hours, refrigera is unnecessary. The incidence of diarrhea, vomi and bacillary dysentery is lower in infants fed eva rated whole lactic acid milk than in infants who rec any other food. The process of evaporation removes risk of the diseases which can be spread through dai

"The contents of a 13 ounce (390 cc.) can of sweetened evaporated milk are poured into a quart previously 'scalded' with boiling water, and the em can nearly filled with boiling water, in which then dissolved 1 teaspoon of lactic acid (U. S. P.) an level tablespoons of sugar. As soon as this solution cold, it is poured slowly into the quart jar contain the unsweetened evaporated milk while shaking the constantly. Although not necessary, it is advisable, order for the lactic acid to accomplish its full b tericidal effect, that the mixture be kept six hours bef being fed in required amounts to the infant. It sho not be boiled or pasteurized as it will curdle. Infa of any age can be fed 100 cc. (100 calories) of t mixture per kilogram of body weight (1½ ounces, calories, per pound) in twenty-four hours, divided i four to six feedings. If a child requires more than t amount (one can each of milk and water, a total 780 cc., 26 ounces), he also needs solid food."

SONTAG, Yellow Springs, Ohio.

THE USE OF CEREAL-THICKENED FORMULAS TO PR MOTE MATERNAL NURSING. CHESTER A. STEWA J. Pediat. **23**:310 (Sept.) 1943.

Complemental feedings by bottle favor the early d continuance of maternal nursing, whereas the consum tion of semisolid foods usually does not diminish t vigor with which infants nurse. This special supe ority of foods of moderately thick consistency o liquid mixtures was tested thoroughly over a period several years. The author's experience with this spec method of feeding is exemplified by the records of

cted group of 51 infants who were breast fed for t months and who also received from the third day ife a moderately thick preparation composed of al cooked in equal parts of whole cow's milk and r, with 5 per cent of sucrose and a pinch of salt d.

t the conclusion of the first month of life the diet his selected group of infants included mother's milk, a or oatmeal cooked in milk, sucrose and orange e. Between the ages of 4 and 8 weeks cod liver oil, lines in oil, creamed tuna fish, salmon and shrimp vell as crushed, unstrained carrots and canned peas e added to the diet. Subsequent additions resulted he construction of a liberal diet for these infants in first year of life. This regimen promoted satisory gains in weight, and its use was accompanied a continuance of maternal nursing in each instance.

program devised to compensate for deficits in the ply of mother's milk without resorting to bottle feed- provided for the following additions to the diet: al-thickened formula, orange juice and cod liver oil the first month; mashed ripe banana and creamed ato in the second month; boiled egg yolk, crushed trained carrots and peas, applesauce, prune pulp and ne juice in the third month; sea fish, whole egg, ato and other vegetables in the fourth month and ts in the fifth month.

Experience with this program in the South for nteen months indicates that a warm climate is no traindication to its use.

n conclusion, the routine use of formulas thickened h cereal, fed by spoon to young infants for the pur- e of compensating for varying degrees of deficiency the supply of breast milk is recommended. This rnative for complemental feeding by bottle does not courage the continuance of maternal nursing.

The introduction of a wide variety of appropriate, derately coarse, semisolid foods into the diet at an ly age acquaints young infants with the majority of important flavors, aromas and food textures they apt to encounter during life, and this early experie promotes excellent eating habits which tend to rsist. The liberal diet also safeguards nutrition by oviding multiple, overlapping sources of essential trients.

SHMIGELSKY, Chicago.

LK INTOLERANCE, THE CAUSE OF A NUTRITIONAL ENTITY. P. A. MCLENDON and D. S. JAEGER, South. M. J. **36**:571 (Aug.) 1943.

The authors pointed out that the medical profession s long advocated milk as the ideal food for infants d children. Arguments are no longer needed to induce ople to drink milk, for nutritionists, dentists and the iry interests have furthered the cause. Nevertheless, is the physician's duty to protect the "intolerant norityy"; he must be able to recognize members of this norityy and free them from the dictum of "a quart of lk a day."

The management of these patients becomes a rela- ely simple problem after the diagnosis is made and e mother is convinced that milk can be safely elim- ated. McLendon and Jaeger gave some of these pa- nts calcium, iron or extra vitamins. These accessories re not usually more than the child was already tak- g or had taken at some previous time, and the authors el sure that the supplements played a minor role in e rapid improvement which followed the elimination milk.

SCHLUTZ, Chicago.

Vitamins; Avitaminoses

VARIATIONS IN THE CUTANEOUS MANIFESTATIONS OF VITAMIN A DEFICIENCY FROM INFANCY TO PUBERTY. CHESTER B. FRAZIER, CH'UAN-K'UEL HU and FU-T'ANG CHU, Arch. Dermat. & Syph. **48**:1 (July) 1943.

The authors report the observations on 6 patients with vitamin A deficiency. They conclude that progressive development of follicular hyperkeratosis of the skin is correlated with the age of the subject. In infants and in children of prepubertal age such lesions occur infrequently, and the younger the child the milder the degree of follicular damage.

The earliest clinical sign of cutaneous involvement was simple xerosis of the superficial epithelium. This was accompanied by histologic evidence of keratotic changes in the epithelium of some of the hair follicles. Other follicles seemed to have escaped damage as judged by the absence of structural abnormalities.

An atrophic stage, characterized by thinning of the epidermis, was observed in the skin of the youngest patients, who presented only cutaneous xerosis. In puberal and adolescent patients the follicular lesions attained the greatest magnitude.

The pathologic changes in the pilosebaceous structures were so correlated with the age of the patient as to suggest that the state of sexual development was the critical factor conditioning the response of these structures to a deficiency of vitamin A.

JACKSON, Iowa City.

Prematurity and Congenital Deformities

SPINA BIFIDA AND CRANIUM BIFIDUM. FRANC D. INGRAHAM and H. WILLIAM SCOTT JR., New England J. Med. **229**:108 (July 15) 1943.

The Arnold-Chiari malformation is a congenital anomaly of the hindbrain characterized by downward elongation of the cerebellum and brain stem into the cervical portion of the bony spinal canal.

Twenty consecutive cases of Arnold-Chiari malformation that came under observation at the Children's Hospital from 1929 to 1943 were examined. Nineteen of these were studied at autopsy as well as clinically. All the patients were infants between 2 days and 18 months of age. Meningocele, with or without hydrocephalus, was the reason for hospitalization in each instance.

The majority of the patients had associated microgyria and craniola cunia.

GENGENBACH, Denver.

EFFECT OF WAR CONDITIONS ON THE PREMATURE INFANT. C. ELAINE FIELD, Lancet **2**:82 (July 17) 1943.

The rearing of 185 premature infants under adverse war conditions with the low mortality of 8.1 per cent is reported. Only 1 infant died of infection.

The high standard of experienced nursing, with minimum handling of the infants, is the explanation offered for the low mortality in this series. Breast milk was given to every infant, and the administration of thyroid was found helpful.

LANGMANN, New York.

Newborn

SKIN DISEASE OF THE NEWBORN INFANT. MACHTELD E. SANO, J. Pediat. **23**:280 (Sept.) 1943.

As a result of an intensive study of a case of desquamative erythroderma (Leiner's disease) correlated

with an extensive review of the literature, the author concludes that the underlying cause of desquamative erythroderma (Leiner's disease) and exfoliative dermatitis (Ritter's disease) is a temporary dysfunction of the endocrine system. The dysfunction in the majority of infants probably originates in the mother, who has to adapt herself physiologically to the demands put on her endocrine system during pregnancy.

The histologic examination of the endocrine glands, illustrated by photomicrographs, and biochemical studies of the case confirm some of the observations reported in the literature.

The conditions observed in this detailed clinical and histopathologic study indicate that desquamative erythroderma cannot be considered as an entity but rather as a manifestation of an underlying cause responsible also for exfoliative dermatitis and possibly other cutaneous diseases in the newborn infant.

SONTAG, Yellow Springs, Ohio.

PRACTICAL APPLICATIONS OF A ROUTINE BLOOD COUNT IN THE NEWBORN. FRANK C. NEFF, Minnesota Med. **26**:779 (Sept.) 1943.

The author emphasizes the fact that since the majority of infants are born in hospitals greater use of the laboratories should be made in determining the hemoglobin content and the blood count of the newborn babies. In fact, he recommends that it be made a routine measure and that if any abnormal change is found a transfusion or transfusions be given to the infant. A transfusion set is illustrated. With the apparatus described blood may be transfused into the small vessels of the scalp, wrist or ankle as well as into the veins of the neck, the elbow or the thigh. Even with a needle as small as a 25 gage it is usually possible to introduce citrated blood or plasma at the rate of 10 cc. per minute, thus only five to ten minutes being required for the amount needed in an infant.

STOESSER, Minneapolis.

THE FIRST MONTH OF LIFE: GENERAL SURVEY. CHARLES MCNEIL, Edinburgh M. J. **50**:491 (Aug.) 1943.

The University of Edinburgh organized its pediatric department under the name of "Child Life and Health." Charles McNeil, professor in that department, discusses in this article deaths and their causes in the natal-neonatal period. Less than 1 per cent of the natal deaths were due to infection, but 27 per cent of the deaths occurring in the neonatal period were due to this cause. The natural immunity of newborn babies is low, as is shown by the fact that staphylococcic infection of the skin spreads much more rapidly than in older children. Infection of the meninges and lungs with the colon bacillus is not uncommon in the first month of life, but it is rare afterward. The eye and the umbilical wound were commonly invaded formerly but rarely now, since an effort is made to protect such vulnerable regions. Thrush, benign in the mouth, is dangerous when it invades the esophagus.

McNeil concludes that newborn babies are vulnerable to infection and that congregation in nurseries favors cross infection. With increasing numbers of babies born in institutions, the dangers must be countered by a stricter nursing technic. In the years 1939 and 1940 the neonatal deaths at the Maternity Pavilion, Royal Infirmary, Edinburgh, numbered 256, one fourth of which were due to infection during the first month of life. Gastroenteritis was the most frequent cause and pneumonia the second; 4 deaths from thrush of [illegible] esophagus occurred in premature infants.

The author summarizes the problems of the [illegible] month, which he regards as forming a link in the [illegible] of maternal and child health. There will be a [illegible] reaching influence from a deeper understanding [illegible] better management of these problems.

NEFF, Kansas City, Mo.

Acute Contagious Diseases

OBSERVATIONS ON BACTERIAL ALLERGY IN SCARLET FEVER. JAMES A. CONNER and ALBERT MILZER, Illinois M. J. **84**:214 (Sept.) 1943.

Three patients in whom urticaria developed while they were convalescing from uncomplicated scarlet fever were tested with various preparations from the hemolytic streptococci isolated from their throats. Positive cutaneous reactions were constantly observed after the intradermal inoculation of suspensions of killed broth cultures and killed, washed saline suspensions, while heated and unheated Berkefeld filtrates, Dick toxin and human convalescent serum gave no reaction.

The possibility of bacterial allergy as a cause is presented, and the possible correlation of such allergy to delayed or late hemorrhagic nephritis and non-suppurative arthritis is considered.

BARBOUR, Peoria, Ill.

MENINGOCOCCEMIA. NELLES SILVERTHORNE, J. Pediat. **23**:155 (Aug.) 1943.

The author reported 3 cases of meningococcemia without meningitis. In 2 cases the spinal fluid was clear and sterile and had a normal cell count. In the other case the fluid was not examined, as there were no signs of meningeal infection. None of the 3 patients were treated with any chemotherapeutic drug or serum and all recovered. Laboratory studies showed that bactericidal power against the patient's own infecting strain of meningococcus developed in the whole blood of each patient, coincident with recovery; in 2 patients the strain was type II and in the other type I. Clinical evidence was presented which supports the contention that other factors than the type of therapy used are responsible for recovery from meningococcic infections.

SONTAG, Yellow Springs, Ohio.

POSTRUBELLA ENCEPHALOMYELITIS. FREDERICK J. MARGOLIS, JAMES L. WILSON and FRANKLIN H. TOY, J. Pediat. **23**:158 (Aug.) 1943.

Fourteen cases of postrubella encephalitis are reported and the clinical features of these and of the 34 previously reported cases are analyzed. It is estimated that the incidence of this complication in the 1942 epidemic of rubella in Detroit was 1 in 6,000 cases.

There is nothing diagnostic about the course or symptoms of the condition except that it follows rubella within a week, at an average of four days after the rash appears. No laboratory tests or reactions are specific. The leukopenia of rubella becomes a leukocytosis with the onset of the encephalitis. The spinal fluid has a normal or slightly increased amount of sugar, an increased amount of globulin and a cell count between eight and five hundred, with an average of ninety-one.

Death occurred in 10 of the 48 cases. In only 2 of the surviving patients did neurologic sequelae develop. The disease causes death or allows complete recovery within three or four days. SONTAG, Yellow Springs, Ohio

ECTS OF POLIOMYELITIS VIRUS ON THE URINARY BLADDER OF RABBITS. JOHN A. TOOMEY, JAMES D. PILCHER and PHILLIP T. ROSSMAN, J. Pediat. **23**: 166 (Aug.) 1943.

oomey and his associates report that they were ble to demonstrate that the virus of poliomyelitis any combination of this virus with toxin obtained n the growth of colon bacilli could cause paralysis he bladder of a rabbit when injected therein.

SONTAG, Yellow Springs, Ohio.

TEMPTS TO RECOVER POLIOMYELITIS VIRUS FROM FRUIT, WELL WATER, CHICKEN CORDS and DOG STOOLS. JOHN A. TOOMEY, WILLIAM S. TAKACS and LINDA A. TISCHER, J. Pediat. **23**:168 (Aug.) 1943.

ttempts were made to recover poliomyelitis virus n fruit (washings), well water, stools from sick s and cords from paralyzed chickens found in vicini- where human poliomyelitis had occurred. Although virus may have been present in the specimens tested, existence could not be demonstrated when either eastern cotton rat or the Macaca mulatta monkey s used as the test animal. AUTHORS' SUMMARY.

TEMPTS TO ISOLATE POLIOMYELITIS VIRUS FROM URINE. JOHN A. TOOMEY, LINDA A. TISCHER and WILLIAM S. TAKACS, J. Pediat. **23**:172 (Aug.) 1943.

The presence of the specific virus of poliomyelitis was demonstrated in urine obtained post mortem from bladders of patients with poliomyelitis when the tern cotton rat was used as the test animal.

AUTHORS' SUMMARY.

CUTE INFECTIOUS MYELITIS FOLLOWING RUBELLA. MILTON H. MORRIS and ABNER ROBBINS, J. Pediat. **23**:365 (Sept.) 1943.

The occurrence of the syndrome of acute infectious uronitis or acute benign myelitis after rubella is common. This is a report of a case of acute benign fectious myelitis in an 18 year old youth who had bella two weeks prior to admission to the hospital. the two week interim he felt well, attended school d played baseball. Two weeks after the onset of bella, for which he remained in bed four days, he ticed weakness of his knees, and the following day was unable to walk or to urinate. The essential ysical conditions observed were those of an acutely well nourished young man with bilateral cervical mphadenopathy, a fine brownish desquamation over e skin and a large globular mass in the suprapubic gion corresponding to the position of the bladder. bdominal and cremasteric reflexes were absent, and e patellar and achilles reflexes were accentuated. No thologic reflexes were elicited. Sensations of touch d pressure were exaggerated in the lower extremities. he white blood cell count was 17,600, with 92 per cent olymorphonuclear leukocytes. The urine was normal. he spinal fluid contained 22 cells per cubic millimeter, l lymphocytes; a smear revealed no organisms. The action for albumin was 1 plus; a trace of globulin as present, and 90.3 mg. of sugar and 728 mg. of hlorides per hundred cubic centimeters. The reaction f the spinal fluid with colloidal gold was negative, and culture showed Bacillus subtilis (contamination). A econd sample of spinal fluid had a 2 plus content of lbumin and a trace of globulin and the total protein ontent was 62.5 mg. per hundred cubic centimeters.

Examination of the eyes revealed no abnormality. The temperature remained elevated, 103 F., for the first three days. It was necessary to catheterize the patient for one week. His inability to walk gradually diminished from the eighth day, and at discharge, two weeks after admission to the hospital, he could walk with support. The paresthesias almost disappeared, and the patellar and achilles reflexes returned to normal, but the cremasteric and abdominal reflexes were still absent. Four weeks later all the symptoms disappeared except absence of the deep reflexes.

There are three views as to the possible cause of this disturbance. One view attributes it to the action of the virus of rubella, another to an allergic or anaphylactic phenomenon and a third to an unknown virus or toxin which is enabled by the presence of rubella to attack the nervous system.

SHMIGELSKY, Chicago.

ACUTE APPENDICITIS IN PATIENTS WITH THE COMMON CONTAGIOUS DISEASES. MAX GOODMAN and IRVING SILVERMAN, New England J. Med. **228**:533 (April 29) 1943.

The records of patients admitted to the Willard Parker Hospital for Contagious Diseases between Jan. 1, 1935 and April 1, 1941 were reviewed for the concomitant incidence of acute appendicitis.

Of 29,802 patients admitted to the hospital, 53 (0.18 per cent) showed gross and microscopic evidence of acute inflammation of the appendix. No patients with diphtheria had appendicitis, while 27 with measles had inflamed appendixes. Appendicitis occurred in 0.09 per cent of the patients with whooping cough and with scarlet fever, 0.12 per cent of the patients with rubella, 0.21 per cent of the patients with chickenpox, 0.27 per cent of the patients with measles and 0.47 per cent of the patients with mumps.

The records of 102 cases of acute appendicitis and pseudoappendicitis were analyzed for age, sex, leukocyte count and the time relation between the onset of appendicitis and manifestation of the contagious disease.

In more than half the cases of acute appendicitis the appendix was found to be already ruptured when the operation was performed.

Two patients with perforated appendix associated with measles and 2 with ruptured appendix associated with scarlet fever died.

A review of the literature is made, and some of the reported cases are included in the study.

GENGENBACH, Denver.

EXTENT OF IMMUNIZATION AND CASE HISTORIES FOR DIPHTHERIA, SMALLPOX, SCARLET FEVER AND TYPHOID FEVER IN 200,000 SURVEYED FAMILIES IN 28 LARGE CITIES. SELWYN D. COLLINS and CLARA COUNCELL, Pub. Health Rep. **58**:1121 (July 23) 1943.

At 8 years of age 61 per cent of the children in 200,000 surveyed families in twenty-eight large cities had been immunized against diphtheria, and 85 per cent had been vaccinated against smallpox. In no region was the rate of immunization against scarlet fever above 5 per cent. The number of immunizations against typhoid was negligible. Of preschool children the number that had been immunized against diphtheria and smallpox increased with the family income. Of children under 15 years of age the number of immuni-

zations against scarlet fever and typhoid increased with the family income, an evidence that immunizations are the result of individual initiative rather than of public programs.

SANFORD, Chicago.

Acute Infectious Diseases

THE SIGNIFICANCE OF THE WIDAL REACTION IN ENTERIC DISEASES OF CHILDREN. MORRIS GREENBERG, J. Pediat. **23**:150 (Aug.) 1943.

The diagnosis of typhoid is frequently made on the basis of physical signs and symptoms and a positive reaction to the Widal test. However, even a high titer for typhoid agglutinins may be obtained in persons who have a Salmonella infection. The Salmonellae are closely related gram-negative, nonsporing, motile bacilli and include the organisms which cause typhoid, paratyphoid A and paratyphoid B as well as the so-called food poisoning organisms, such as S. cholerae suis, S. typhi murium and S. enteritidis. The Salmonellae are divided into a number of groups, each with a characteristic 0 antigen. The typhoid bacillus belongs in group D, together with several other species of Salmonella, such as Salmonella enteritidis, Salmonella panama and Salmonella eastbourne. An infection with any member of this group will cause the patient's serum to agglutinate the 0 antigen of this group, so that an infection caused by Salmonella enteritides, for example, will cause agglutination of the 0 antigen of typhoid which is common to both. Similarly, an infection with salmonella typhi murium may give a high titer for the agglutination by the patient's serum of the antigen of paratyphoid B because Salmonella typhi murium and the paratyphoid B organism belong in the same group. In order to make a diagnosis of typhoid or paratyphoid, it is therefore important to examine the patient's stools for the causative organism, in addition to performing the other laboratory tests. Histories of several cases are given in which a preliminary diagnosis of typhoid or paratyphoid fever was made on the basis of clinical symptoms and a positive Widal reaction, while the ultimate diagnosis was infection with another species of Salmonella. A condensed table of the Kauffmann-White schema of classification is given, showing the grouping of the Salmonellae according to their antigenic structure.

SONTAG, Yellow Springs, Ohio.

TRICHINOSIS DURING CHILDHOOD. H. A. SLESINGER, J. Pediat. **23**:327 (Sept.) 1943.

During the past several years the incidence of trichinosis has been found to be much higher than previously considered. Slesinger reports a study of 18 cases of trichinosis occurring in children 2 to 15 years of age during the interval from November 1941 to February 1943. There was a small epidemic of this disease from October to December 1941. The youngest patient was 2 years old, 1 patient was 3 years old, and 5 were 8 years old.

The larvae, freed from their cysts in meat by the action of the gastric digestive juices, penetrate the intestinal mucosa, where the male and female sexual forms develop and mate within forty to seventy-two hours after the meat is eaten. The larvae are produced six to seven days after infection, and larval production may continue for six week or more. The larvae encyst chiefly in the voluntary muscles but may affect almost any organ of the body.

The symptoms in children are not as typical as in adults. In the cases reported the symptoms usually consisted of fever (temperature 100 to 104 F.), headache, gastrointestinal upsets, muscular pains and occasionally edema of the eyelids or of the extremities. Only 4 patients had edema of the face and 2 edema of the lower extremities, of one to two days' duration. The number of eosinophils in the blood was relatively low. Some patients had no eosinophilia, and the highest count showed 32 per cent, in contrast to 80 per cent in adults. The eosinophilia was transient, and it appeared about one week after the onset of infection and subsided within a week. The number of white cells per cubic millimeter of blood varied from 7,050 to 36,900. The erythrocyte sedimentation rates were slightly to moderately increased. Of diagnostic value is the intradermal test, which consists of injecting 0.01 cc. of a 1:10,000 dilution of antigen prepared from powdered trichinal larvae. The test is read in fifteen to twenty minutes and a positive reaction consists of the development of a wheal surrounded by a zone of erythema; a delayed reaction may occur after thirty-six hours. The reaction to the test is not positive until the second week of infection. Eight of the 10 patients tested gave positive reactions. The precipitin test, which becomes positive on the tenth day after infection, was performed on all of the patients; 16 of the 18 had positive reactions. False positive reactions occurred in a patient with typhoid fever and in another with undulant fever. Biopsy of muscle tissue would give the most conclusive evidence, but it is not practical.

Most of the patients were symptom free one week after admission to the hospital. One must differentiate trichinosis from influenza, acute nephritis, acute sinusitis and acute rheumatic fever. The treatment is symptomatic and consists of the administration of sodium salicylate or acetylsalicylic acid plus an opiate for relief of pain and the forcing of fluids; chemotherapy is of no value.

SHMIGELSKY, Chicago.

TYPHOID FEVER IN A SEVEN-MONTH-OLD INFANT. WALLACE SAKO and JOEL FLEET, J. Pediat. **23**:340 (Sept.) 1943.

A case of typhoid with recovery is reported in an infant 7 months of age. The literature indicates the rarity of the disease in infants and discloses the difficulties that may interfere with diagnosis of the condition.

The patient had a history and physical conditions typical of typhoid, although this is often not the case when typhoid fever occurs during infancy. Contaminated well water probably was the source of infection in this child. It is interesting to note that in this patient the Widal agglutination reaction did not become positive until the fever had subsided, approximately five weeks after the onset of the disease.

The current higher mortality from typhoid in infancy than in other age periods might be reduced if the disease were recognized promptly and the patient's fluid balance and nutrition adequately maintained.

SHMIGELSKY, Chicago.

CHRONIC MALARIA. R. A. GREENMAN, M. Rec. **155**: 398 (Aug.) 1943.

A case of chronic recurrent malaria is reported with a comment on the difficulty of diagnosis and the frequent confusion with influenza and typhoid. The usual cause is the estivoautumnal parasite (Plasmodium falciparum). The disease has a gradual onset and may simulate many diseases. Chills may be a minor complaint. If laboratory identification of the parasite is

ot successful the therapeutic test, with quinine, should e used; if the fever does not disappear with quinine, it not malarial.

FERDINAND, Peoria, Ill.

NDEMIC ROCKY MOUNTAIN SPOTTED FEVER IN MASSACHUSETTS. A. DANIEL RUBENSTEIN and HAROLD F. ROWLEY, New England J. Med. **229**:455 (Sept. 16) 1943.

All 5 of the infections observed in Massachusetts ere acquired on Cape Cod.

The distribution according to the month of onset was s follows: May 1, June 1 and July 3. The dog tick, ermacentor variabilis, which is the vector of this isease in the East, becomes most plentiful during the tter part of May or early in June and its prevalence eclines sharply after mid July. There is usually a lag f several weeks between the time of maximum abunance of ticks and the peak in case incidence.

Two of the cases, those of a boy of 4 years and a girl f 8 years, are reported in detail.

GENGENBACH, Denver.

ALARIA IN INFANCY. HENRY A. REISMAN, New York State J. Med. **42**:1751 (Sept. 15) 1942.

Quartan malaria in a 3 month old infant was probably cquired from an intramuscular injection of the mother's lood soon after the child's birth. The baby recovered.

AIKMAN, Rochester, N. Y.

WAR-TIME DECLINE OF ACUTE RHEUMATISM. J. ALISON GLOVER, Lancet **2**:51 (July 10) 1943.

A decline in the incidence of rheumatic fever has been erceptible for many years. As early as 1930 Glover entured to call it an "obsolescent" disease. Since the eginning of the war its gradual decline has greatly ccelerated; the death rate has been halved. A general mpression has been received of lessened incidence and ecreased clinical severity of rheumatic fever, carditis nd chorea.

The provision of supervisory centers and of hospital nd convalescent accommodation for rheumatic children, mportant preventive measures as they are, can hardly ave been developed enough before about 1930 to influence the decline appreciably.

The decrease in poverty caused by abundant employment during the war, the greatly increased provision of milk for all children and of solid meals for school children and the "long changes of air" due to evacuation, which has tended to decrease urbanization, are all possible factors in the sudden acceleration of decline.

But beyond and above all these factors Glover suggests that the main cause of the decline is a change in the relationship between man and the pyogenic streptococci. Is man becoming more immune, or, in other words, is Streptococcus pyogenes becoming less likely to provoke the rheumatic reaction, just as it seems to be becoming less toxigenic as measured by the incidence and severity of scarlet fever?

LANGMANN, New York.

BACILLARY DYSENTERY: CHEMOTHERAPY IN ITS TREATMENT. ERNEST BULMER and W. M. PRIEST, Lancet **2**:69 (July 17) 1943.

A series of 483 patients with nonamebic diarrhea, most of them with bacillary dysentery, were treated with sulfonamide drugs. Sulfaguanidine proved to be the most effective. Sulfanilamide and sulfapyridine were also used.

The stay in the hospital was substantially reduced for 323 patients treated with sulfaguanidine as compared with 600 controls.

LANGMANN, New York.

PERSISTENCE OF TETANUS ANTITOXIN IN MAN FOLLOWING ACTIVE IMMUNIZATION. D. G. EVANS, Lancet **2**:316 (Sept. 11) 1943.

Administration of a third dose of tetanus toxoid increases the concentration of antitoxin in the blood. For eighteen months at least the concentration remains much higher than that resulting from two doses of toxoid.

Two doses of tetanus toxoid, each of 1 cc., were given at an interval of nine weeks. The content of the circulating antitoxin in the serum was determined before and after the first injection and also four and ten months after the second. The effect of a third injection, given ten months after the second, was also investigated in 16 persons.

LANGMANN, New York.

THE SULPHAGUANIDINE TREATMENT OF SHIGA DYSENTERY IN NEW GUINEA. J. J. GARD, M. J. Australia **2**:188 (Sept. 4) 1943.

Gard reports uniformly good results in the treatment of 25 adults with bacillary dysentery with sulfaguanidine. An initial dose of 7 Gm. of the drug was followed by 3.5 Gm. every four hours for five doses daily. As soon as the number of stools was reduced to five or less a day the dosage was reduced to 3.5 Gm. three times daily and kept at that level until the stools remained normal for two or three days. The average number of days of treatment up to the time when the stools became normal in appearance and frequency was eleven and a half.

GONCE, Madison, Wis.

FASCIOLA HEPATICA IN A NINE MONTHS OLD CHILD. A. V. PAUSA, A. I. SANDOVAL, A. S. AZZI and M. G. VASQUEZ, Arch. de med. inf. **22**:163 (July-Sept.) 1943.

This is the first case of infection with Fasciola hepatica reported from Cuba. The source of infection was presumed to be berries or vegetables that contained the organism. The treatment used was the administration of 25 cg. of emetine hydrochloride in eighteen days by duodenal tube.

SANFORD, Chicago.

Chronic Infectious Diseases

THE USE OF ACETYLARSAN IN THE TREATMENT OF CONGENITAL SYPHILIS IN CHILDREN. JOSEPH YAMPOLSKY and CHARLES C. POWEL, J. Pediat. **23**:303 (Sept.) 1943.

Acetylarsan is a pentavalent compound containing 21.5 per cent arsenic. It occurs as a white powder freely soluble in water and is usually administered by subcutaneous or intramuscular injection although it may be given intravenously. The preparation, which is closely allied to and a derivative of acetarsone, is stated to be parahydroxyacetylaminophenylarsinate of diethylamine. Acetylarsan is supplied in an aqueous solution containing 23.6 per cent of the compound. This solution is neutral in reaction, colorless and clear and contains 5 cg. of arsenic per cubic centimeter; each cubic centimeter has an arsenic content equal to 0.25 Gm. of neoarsphenamine.

Dosage.—Acetylarsan is given intramuscularly, 0.5 cc. (0.025 Gm.) for each 20 pounds (9.1 Kg.) of body weight.

Course of Treatment.—Acetylarsan is supposed to be given in repeated courses of nine weeks of treatment alternated with six weeks of rest.

This drug seems to be well tolerated by children, and in the group of cases reported in this article only 1 child had diarrhea and a macular rash over the face, chest and arms with hyperpyrexia for nine days. The following reactions, however, have been reported in the literature: hyperpyrexia and malaise; vomiting some hours after an injection, also nausea and vertigo; toxic erythematous eruption; albuminuria; jaundice, and Herxheimer's reaction. The most frequent phenomenon complained of is headache. This condition, of course, would be difficult to detect in young infants.

In patients between the ages of 3 weeks and 1 year all lesions cleared up promptly after twenty to thirty injections. However, reversal of serologic reaction was noticed in only 4 of 11 cases. Roentgenographically, improvement was noticed in 3 and complete disappearance of osseous lesions in 2 cases out of 6. In the remaining case there was still a considerable degree of syphilitic involvement of the bones.

In children from 1 to 12 years of age secondary lesions did not improve; however, in 1 child iridocyclitis showed definite improvement after treatment. Serologically no change was noticed. In only 1 case was roentgen examination made and evidence of the disease remained after thirty-six treatments.

On the basis of the foregoing facts the following conclusions have been drawn: 1. Acetylarsan does not bring about toxic reactions in young children. 2. In order to reverse the Kahn reaction in young children treatment should be continued for at least a year. 3. Cutaneous lesions and other manifestations in young children can be healed by the use of this drug. 4. Roentgenologic improvement of osseous lesions is seen more often in young than in older children. 5. Apparently older children do not respond to this drug alone, and the authors suggest the use of bismuth along with it for the improvement of lesions of late and latent syphilis.

YAMPOLSKY, Atlanta, Ga.

TUBERCULOSIS AT A CHILDREN'S HOSPITAL. MARGARET E. HARKER, Lancet **2**:387 (Sept. 25) 1943.

An analysis of the records of patients with tuberculous infection admitted to the Hospital for Sick Children, Great Ormond Street, during the first six months of 1942 bears out the report of the Medical Research Council that there has been an increase in tuberculosis in children under 5 years of age. In 1942 2.98 per cent of the total admissions, as compared with 2.11 per cent in 1938, were for tuberculous infections.

LANGMANN, New York.

Diseases of Blood, Heart and Blood Vessels and Spleen

THE OCCURRENCE OF A VASOCONSTRICTOR SUBSTANCE IN BLOOD DURING SHOCK INDUCED BY TRAUMA, HEMORRHAGE AND BURNS. IRVINE H. PAGE, Am. J. Physiol. **139**:386 (July) 1943.

Shock was produced in dogs by placing tourniquets around the extremities, by stripping and exposing the intestines, by means of hemorrhage and by means of burns, and it was found that in association with the condition of shock a substance appears in the plasma which causes vasoconstriction in rabbits' ears perfused with either calcium-free Ringer solution or plasma. The author states the belief that this substance d not originate in the kidneys or adrenal glands and destruction of the spinal cord or renal denervation d not prevent its appearance. Furthermore, evidence tained from application of a method depending "fatiguing" the vascular musculature suggests that vasoconstrictor action of plasma from burned, bled shocked dogs may be due to the presence of an identi or similar substance. The original paper should consulted concerning the details of the experime which were conducted.

STOESSER, Minneapolis

Diseases of Nose, Throat and Ear

NONSURGICAL ASPECTS OF TREATMENT OF ACU LARYNGOTRACHEOBRONCHITIS. HARRY L. BAU Ann. Otol., Rhin. & Laryng. **52**:608 (Sept.) 19

Acute laryngotracheobronchitis occurs most frequen in young children during the seasonal epidemic of fections of the respiratory tract. It is first characteri by laryngitis with moderate fever, dry cough, subglot edema and partial laryngeal obstruction. As it p gresses, tracheobronchial inflammation and edema velop, with exudation of thick, tenacious secretions. laryngeal obstruction progresses, the cough lesse sometimes disappearing entirely, the temperature dro sometimes to subnormal, and "pale cyanosis" develo as a result of suboxidation and cardiac and circulato exhaustion from prolonged violent respiratory effo (respiratory shock). If the laryngeal respiratory di culty is relieved by timely surgical intervention, sym toms improve and the temperature rises rapidly becau of renewed oxygenation, but edema and exudate a still present in the trachea and bronchi. If this goes to obstruction, death occurs from exhaustion, obstructiv atelectasis, pneumonia or all three. If there is broncho scopic removal of the secretions, there is again i provement, but the inflammatory edema persists, a bronchoscopy must be done repeatedly. In spite of th the patient may die. Toxemia seems to play a secon ary role but is often a factor, especially in those cas which terminate in pneumonia. The mortality is e tremely high, as shown by the reports quoted fro numerous authorities.

Baum feels that nonsurgical treatment gives the mo hope and discusses his method. He uses convalesce human serum, which may often be secured from so other member of the family from whom the child a quired the basic infection. From 50 to 200 cc., depen ing on the size of the patient, is given, preferabl intravenously; however, it may be given subcuta ously or intramuscularly. This procedure may be r peated if desired. If this type of serum is not avai able, then pooled human influenzal convalescent ser should be used. If the latter cannot be secured, or an adjunct is needed in severe cases, human antistre tococcic (scarlet fever) convalescent serum should b used.

Humidified oxygen is exceedingly valuable for relie ing respiratory distress and gives the necessary resp while other measures are in preparation or taking effe

Hypertonic human plasma may give prompt rel of the subglottic and tracheal edema. The plasma com in the dry form, and instead of restoring it to its fu volume one adds only one fourth of the normal volu of water, which gives a mixture containing four tim the normal proportion of plasma protein. This mixtur can be given intravenously with perfect safety. B osmotic action it withdraws the fluid from the edem

...s tissues into the blood, relieving the obstruction. ... initial dose of 25 to 40 cc. is usually sufficient; ...may be repeated as often as necessary. If this is to ... given, particularly after recent administration of con...lescent serum or in the presence of suspected pul...onary stasis or evident circulatory embarrassment, ...nesection is advisable, with letting of blood to about ...ur times the volume of the concentrated plasma to be ...ministered.

Surgical intervention for the relief of dyspnea, espe...lly tracheotomy, frequently has serious consequences, ...edisposes to difficulties in the lower respiratory tract ...d is to be avoided if prompt and adequate relief can ... obtained without it. Surgical methods must, how...er, be resorted to without delay in certain cases when ... is seen that nonsurgical treatment is not securing ...e desired results.

M. V. MILLER, Philadelphia. [Arch. OTOLARYNG.]

MEDIASTINAL EMPHYSEMA AND PNEUMOTHORAX FOLLOWING TRACHEOTOMY. GILBERT B. FORBES and G. W. SALMON, J. Pediat. **23**:175 (Aug.) 1943.

Whenever tracheotomy is performed on a patient who ...hibits severe respiratory obstruction or labored respi...tory efforts, the possibility of the development of ...ediastinal emphysema must be considered. Four cases ... which this occurred are presented. The symptoms ...e those of cyanosis and respiratory distress, and occa...ionally sudden death occurs. Mediastinal emphysema ... easily diagnosed by fluoroscopy with the patient in ...he lateral position, and the pneumothorax which may ...esult from the emphysema, by the usual signs. Simple ...spiration of the air is often sufficient to relieve the ...ymptoms which arise from the latter condition; it ...arely succeeds in alleviating the emphysema because of ...ocketing of the air in the loose mediastinal tissues. ...Various possible mechanisms responsible for the emphy...ema are discussed; the most likely is the suction of ...ir into the mediastinum along the fascial planes of ...he neck. Pneumothorax presumably occurs by the ...scape of air through a rupture in the relatively thin ...ediastinal pleura, aided by the decreased intrathoracic ...ressure resulting from inspiratory efforts against an ...bstructed airway. SONTAG, Yellow Springs, Ohio.

HEMOPHILUS INFLUENZAE TYPE B LARYNGITIS WITH BACTEREMIA. P. G. DUBOIS and C. ANDERSON ALDRICH, J. Pediat. **23**:184 (Aug.) 1943.

Four cases of laryngitis and bacteremia caused by Haemophilus influenzae type B are reported. The clinical picture first described by Sinclair is emphasized because with it in mind the diagnosis may usually be made on inspection. The condition is characterized by (*a*) acute onset, (*b*) extreme prostration or "shock" out of proportion to the local symptoms, (*c*) severe laryngitis with extreme edema and hyperemia of both the false and true cords, (*d*) fever and (*e*) definite neutrophilic leukocytosis. The diagnosis is made accurately when H. influenzae is demonstrated in cultures of blood and of material from the larynx. Vigorous treatment with sulfonamide drugs after prompt tracheotomy was followed by early recovery in 3 of the 4 patients. The fourth patient recovered after a stormy, complicated course. Tracheotomy is advised because most of these patients are exhausted to the point of collapse, and the surgical procedure seems to decrease the severity of the disease and to shorten its course.

SONTAG, Yellow Springs, Ohio.

EMOTIONAL DISTURBANCES OF CONSTANT PATTERN FOLLOWING NONSPECIFIC RESPIRATORY INFECTIONS. HELEN G. RICHTER, J. Pediat. **23**:315 (Sept.) 1943.

The observations reported in this study were made in the Department of Pediatrics, Yale University School of Medicine and the Children's Clinic, New Haven Hospital.

Since December 1940, 12 children have been observed and treated for diffuse emotional disturbances following mild infections of the upper respiratory tract. In each case a supposedly "normal" child had an illness diagnosed as "flu," "grippe," "tonsillitis" or "cold." In each instance the infectious phase was mild with low febrile response and the duration of this phase was short, ranging from a few days to one week. In all these cases a well defined change in personality was established within one month after the onset of the illness.

The analysis of the emotional disturbances revealed a syndrome of anxiety, depression and anancastic manifestation, that is, compulsive, obsessive phobic thinking and behavior. Also similar in these cases were the sequences in type and time relationships through which the symptoms developed and resolved themselves: (1) a short interval (one to two days) which was characterized by features similar to a quasidelirium, with motor restlessness, apprehension, tension and lability in mood; (2) a period of heightened anxieties and a depressive mood with an apparent onset of compulsions and obsessions, of varying duration. Subsequently these children withdrew from their everyday interests. At first the withdrawal was from the less familiar and the more recently acquired expressions of socialization; later, from the more superficial interpersonal relationships. Finally, contact with familiar persons was severely disturbed.

At the height of the emotional illness these children were preoccupied, at times "wooden," slightly retarded, sad, at times irritable, uncooperative, demanding, self accusatory, resentful, fearful, anxious and terrified. They were busy in the performance of rituals and repetitious acts meaningful to them. Sleep and the intake of food were frequently disturbed. School work was marked by failure.

Recovery was slow but also revealed certain patterns of progression. The first indications of change were usually improvements in mood and in motor activity. The stages of regression which followed were of varying duration. These regressive interests and activities were appropriate for chronologic levels lower by several years than the patients' actual ages and seemed to be proportionate to the severity of the entire emotional illness. A gradual subsidence of the gross compulsive and obsessive activities came relatively late in the recovery phase. In all cases, one of the last adjustments made was in the ability to cope with the school program, fulfilling both academic and social requirements. It would seem that the recovery phase reversed the process of withdrawal. The children felt increasingly secure enough to return to interests in enlarging fields of activity. Their interpersonal readjustments started in the family group and later extended to multiple contacts with various people.

Specific bacteriologic agents, vitamin deficiencies, drug intoxications or chronic illnesses could not be considered contributing etiologic factors.

A survey of the possible pertinent literature did not reveal descriptions of this type of symptomatic neurosis in association with mild infections of the upper respiratory tract.

Differential diagnosis must be made between sequelae of "influenza," psychotic states associated with epidemic influenza, emotional disturbances associated with chronic encephalitis, some forms of delirium, anxiety states, conditions allied to manic-depressive psychoses and the more classic "compulsive neurosis." Although there are certain similarities between the behavior observed in the present series and in any one of the clinical entities listed, not one of the latter is characterized by an initiating infection of the upper respiratory tract followed by quasidelirium which ushers in compulsive behavior of varying duration.

The personality configurations of the children in whom this illness developed were strikingly similar, characterized by subservience, docility, perfectionistic striving and nonaggressive behavior. During the illness the children became overtly aggressive with associated strong feelings of guilt and with attempts to counteract these manifestations by compulsions and obsessions.

The prognosis is favorable. Spontaneous recovery may be expected in six to nine months.

Therapy must first be directed to supportive measures to treat the initiating infection. In the early stage of personality disturbance anxiety, restlessness and changes in mood are dominant; psychotherapy may be started in this period. Hospitalization for the more acute disturbances is advised chiefly to obtain adequate sedation (chemical and hydrotherapeutic), personal reassurance and protection from suicidal attempts and from too destructive, aggressive behavior. After the acute stage is passed prolonged psychotherapy is needed to bring to the child's understanding the psychologic mechanisms involved in his personality problems and thus to strengthen and hasten the spontaneous recovery.

RICHTER, New Haven, Conn.

A HEARING AID CLINIC. B. H. SENTURIA, S. R. SILVERMAN and C. E. HARRISON, J. Speech Disorders **8**:215 (Sept.) 1943.

Seventy-five unselected cases of deafness are reported. Of these, 19 were instances of conduction deafness, 29 of mixed deafness and 17 of perception deafness. Thirteen hearing aids approved by the Council on Physical Therapy of the American Medical Association were tested for efficiency with various types of deafness; some are better than others, depending on the type of deafness. A slight increase in hearing may result in a great increase in intelligibility due to the fact that gaps in the auditory pattern are filled. The authors believe that a period of acoustic training is desirable after the acquisition of a hearing aid.

PALMER, Wichita, Kan.

AUDIOMETRIC TESTING AND HEARING CONSERVATION IN THE PUBLIC SCHOOLS. HORACE NEWHART, J. Speech Disorders **8**:237 (Sept.) 1943.

State plans for the audiometric testing of children are essential. Every public school pupil should have a screening test and if necessary a later audiometric test by a physician.

PALMER, Wichita, Kan.

HEARING DEFICIENCIES AND SPEECH PROBLEMS. RAYMOND CARHART, J. Speech Disorders **8**:247 (Sept.) 1943.

The author summarizes the literature dealing with the influence of loss of hearing on speech and reveals a number of inconsistencies. He suggests a series of problems which need much further investigation.

PALMER, Wichita, Kan.

LIP READING—A CONTINUING NECESSITY. HARRY MONTAGUE, J. Speech Disorders **8**:257 (Sept.) 19

The values of lip reading and of modern schools the teaching of lip reading are outlined.

PALMER, Wichita, Kan.

A CINEMATOGRAPHIC TECHNIQUE FOR TESTING VISU SPEECH COMPREHENSION. MARIE KATHERINE M SON, J. Speech Disorders **8**:271 (Sept.) 1943.

Mason reports the changes made in the revision her moving picture tests of ability in lip reading ba on additional cases and showing a great increase reliability. The test is given by silent film and is su able for children aged 6 to 12 years.

PALMER, Wichita, Kan.

THE REALITY OF THE ZERO REFERENCE LINE FOR PU TONE TESTING. HAROLD WESTLAKE, J. Speech D orders **8**:285 (Sept.) 1943.

A controlled study of 100 normal subjects mak it clear that the zero reference line of the audiomet the theoretic threshold, is not completely objecti When subjects watch the dials of the 6A audiome they come close to the zero reference line. When th do not watch the dials there is a considerable dispersi away from the zero reference line.

PALMER, Wichita, Kan.

THE EFFECTS OF NOISE AND CONCUSSION ON HEARIN H. B. PERLMAN, J. Speech Disorders **8**:289 (Sept 1943.

The specific acoustic and physiologic factors th relate noise and concussion to the auditory sense ar analyzed. Sensitivity to high frequencies is often lo through acoustic trauma. The author reports consid erable personal clinical experience and reviews th literature. The results observed during the Spanish Civil War are cited to show various effects of sudde large pulses of sound. Cerumen in the ears may ruptur the ear drum. Occasionally fracture of the tempora bone occurs. Many cases of deafness due to noise o concussion are not reported; a manual laborer, fo example, will not be as aware of a loss in degree o hearing as keenly as a musician.

PALMER, Wichita, Kan.

THE DIAGNOSIS AND TREATMENT OF LUDWIG'S ANGINA ASHBEL C. WILLIAMS and WALTER C. GURALNICK New England J. Med. **228**:443 (April 8) 1943.

The mortality in the present series was 10 per cent compared with 54 per cent in an earlier one.

In the previous report the source of the infectio appeared to be dental in 51 per cent of the cases. It was surprising to discover that a dental lesion wa apparently the initiating factor in 18 (90 per cent) o the present series.

Streptococci have long been known to predominat as the causative organisms in Ludwig's angina. Th presence of other organisms that grow best anaerobi cally has been mentioned previously.

The authors have been unable to control the disease in any instance by treatment with sulfonamide drug alone.

It is recommended that the trachea be exposed b tracheotomy completed with local anesthesia. This having been done and an airway or a potential airway thus assured, pentothal sodium should be administered intravenously and the incision and drainage carried ou with the patient anesthetized with the latter drug

ygen should be administered nasally during the ond phase of the procedure.

GENGENBACH, Denver.

INA BIFIDA AND CRANIUM BIFIDUM: IV. AN UNUSUAL NASOPHARYNGEAL ENCEPHALOCELE. FRANC D. INGRAHAM and DONALD D. MATSON, New England J. Med. **228**:815 (June 24) 1943.

The fourth paper in this interesting series is, like its decessors, well illustrated. The diagnostic and surcal procedures for handling an encephalocele of a e type are presented in detail.

GENGENBACH, Denver.

ADIUM TREATMENT OF GRANULAR OR HYPERTROPHIED LATERAL PHARYNGEAL TONSILLAR BANDS. ROBERT E. FRICKE and PETER N. PASTORE, Radiology **41**:256 (Sept.) 1943.

In chronic pharyngitis the lymph follicles covering e entire pharynx and nasopharynx are hypertrophied, d raised patches due to lymphoid cells around the ct are easily seen. This condition is the so-called anular pharyngitis. When lateral pharyngeal tonlar bands are hypertrophied, the infection is usually rmed "lateral pharyngitis." Elimination of all infected sue in Waldeyer's ring cannot be accomplished by erative procedures alone; only the faucial or palatine nsil can be completely removed surgically. After the eration there is a tendency, in some instances, for e lateral pharyngeal bands or the tonsillar plaques in e lateral pharyngeal walls to undergo hypertrophy. reatment by a variety of therapeutic measures has not en satisfactory. Although granular pharyngeal tonlar bands are occasionally unattended by symptoms, ey are a potential source of acute infection and of a inful and disabling sore throat.

Small doses of radium were safely employed, using especially designed radium applicator, with gratiing success. A metal rod is threaded at the end so at a brass and silver tube containing radon can be tached; a hinged joint has been introduced just behind e attachment. The end of the rod, with the tube ntaining the radon attached, is passed through the ostril under topical anesthesia. When the rod is rned, the hinged portion drops downward and lies gainst the hypertrophied lateral band. The hinge is nstructed to lock at an angle of about fifty degrees, e lateral pharyngeal wall.

o that the long axis of the radon tube presses against The dose of radium used varied in the earlier cases om 1.5 to 4.5 gram minutes, but later it was standrdized at 3 gram minutes to each lateral pharyneal tonsillar band. Usually about 50 millicuries of adon was used; hence, one hour's application through ach nostril furnished the planned dose. Twenty paents had only one treatment each with radium; 4 had wo treatments each, a few months apart. Two of he 24 patients were given roentgen therapy, and 3 of hem had surgical treatment in addition to the radium herapy. The authors consider it probable that the reatment will need repetition from time to time, because f the recovery of the lymphoid structures after several nonths.

ANSPACH, Chicago.

SYMPOSIUM ON SINUSITIS IN INFANCY. A. CODINACH, R. MACHEDO and S. FUENTES, Arch. de med. inf. **22**:133 (July-Sept.) 1943.

The etiology of sinusitus was discussed by Dr. Ortega, he symptomatology by Dr. Cruz and the treatment by Dr. Codinach. This symposium should be read by those interested in this field, as it cannot be successfully abstracted.

SANFORD, Chicago.

SUFFOCATING LARYNGITIS. S. GONZALEZ AGUIRRE, B. MESSINA and R. REY SUMAY, Rev. Soc. puericult. Buenos Aires **9**:242 (July-Sept.) 1943.

A review of the literature on suffocating laryngitis is presented.

The causation, pathogenesis and clinical picture of the condition are discussed. The authors state the belief that menthol present in "Vick's Vaporub" plays an important role in the production of laryngospasm by aggravating the general condition. Ten cases of suffocating laryngitis are presented; 5 patients died. The use of various therapeutic measures and medicaments, including intubation, tracheotomy, direct tracheobronchial aspiration through the endoscope, steam, sulfanilamide and derivatives of it (administered locally and generally), antispasmodics (phenobarbital or aconite) and calcium gluconate (administered intravenously) is discussed.

The use of opium, which suppresses the cough reflex, or of belladonna, which dries up secretions, making difficult their expulsion, is contraindicated. In all 10 cases diphtheria toxoid-antitoxin was used.

BRIBIESCA, Mexico.

Diseases of Lungs, Pleura and Mediastinum

THE DIAGNOSIS OF VIRUS AND BACTERIAL PNEUMONIA IN CHILDREN. MAXWELL FINLAND, New England J. Med. **229**:201 (July 29) 1943.

In general, the recent tendency has been to make a diagnosis of virus pneumonia when a person fails to respond to treatment with a sulfonamide drug. However, one must remember two things: In the first place, even the common bacteria that are known to respond to the action of sulfonamide drugs are sometimes resistant; this is occasionally true of pneumococci; secondly, pneumonia due to organisms like streptococci and staphylococci requires prolonged and intensive treatment.

Of the nonbacterial agents causing pneumonia, the commonest is the virus of influenza, which is capable of producing various lesions in the lungs. It may also predispose the patient to severe bacterial infections, particularly with staphylococci or with influenza bacilli and sometimes with other organisms, such as streptococci.

GENGENBACH, Denver.

Diseases of the Gastrointestinal Tract; Liver and Peritoneum

BENEFICIAL EFFECT OF SMALLPOX VACCINE ON RECURRENT APHTHOUS ULCERS OF MOUTH AND TONGUE. ARTHUR W. GRACE, Arch. Dermat. & Syph. **48**:151 (Aug.) 1943.

The author repeatedly inoculated 2 patients with aphthous ulcers of mouth and tongue with smallpox vaccine on the assumption that the condition is probably caused by a virus akin to that of herpes simplex, a disease which when recurrent is frequently controlled by such treatment. Both patients showed great improvement.

JACKSON, Iowa City.

CHEMICAL AND ENZYMIC STUDIES OF THE DUODENAL CONTENTS OF INFANTS. LASLO KAJDI and WILBURT C. DAVISON, J. Pediat. **23**:204 (Aug.) 1943.

The specific gravity of duodenal contents under tasting conditions (uncontaminated by gastric contents) was

low (1.002 to 1.010). The surface tension was fairly constant (31.6 to 35.3 dynes or 0.434 to 0.484 times that of distilled water). Variations in the p_H and in the amounts of bile acids and pancreatic enzymes present apparently were not related to changes in surface tension. Some factors responsible for this relatively constant surface tension were discussed, lecithin—cholesterol antagonisms, influence of proteins on the surface tension of bile salt solutions, changes in the p_H and the paradoxic effect of dilution. The p_H of duodenal contents under fasting conditions varied from 6.8 to 8.2 and the content of trypsin from 32 to 372 units per cubic centimeter and of amylase from 56 to 6.165 units per cubic centimeter. There was no apparent relationship between the time elapsed since the last meal and the enzymic activity of the duodenal fluid. Secretion of trypsin and amylase was greatly reduced in patients with diarrhea. The rate of formation of duodenal fluid during fasting varied from 4 to 31 cc. per hour.

SONTAG, Yellow Springs, Ohio.

STUDIES OF NITROGEN AND FAT METABOLISM ON INFANTS AND CHILDREN WITH PANCREATIC FIBROSIS. ALFRED T. SHOHL, CHARLES D. MAY and HARRY SHWACHMAN, J. Pediat. **23**:267 (Sept.) 1943.

Infants and children with pancreatic fibrosis show a type of metabolism which closely approximates that described as occurring in dogs with blocked pancreatic ducts. It is characterized by the excretion of feces with a high dry weight and large content of nitrogen; the content of fat is moderately increased when the patient is fed a diet derived from casein hydrolysate, but since this contains no native protein, the dry weight of the feces, and the content of nitrogen and of fat were little affected. The addition of pancreatin to a diet containing both protein and fat was followed by some reduction in the total amount and nitrogen content of the feces but caused no change in the amount of fat excreted. The amount of fecal excretion and the nitrogen in the feces were reduced to within normal limits when a fat-free ration consisting of casein hydrolysate and dextrose was administered.

AUTHORS' SUMMARY.

OBSTRUCTION OF THE LARGE BOWEL IN NEWBORN INFANTS DUE TO CONGENITAL BANDS. JERRY ZASLOW, J. Pediat. **23**:337 (Sept.) 1943.

It is the purpose of this paper to describe the clinical picture found when there is a simple obstruction of the large bowel in newborn infants. Although there have been infrequent reports of cases of obstruction of the colon, it appears that there are no proved cases of obstruction of the large bowel due to extrinsic bands in the absence of other malformations.

In infants obstruction of the large bowel produces a symptom complex like that occurring in adults with similar obstructions. There is marked abdominal distention, and vomiting, if present at all, is late in appearing. This is demonstrated by 2 cases recorded at Jewish Hospital in Philadelphia. In both cases distention appeared soon after birth and was progressive. Vomiting was a minor symptom, late in appearing, and was not severe until just before death. Stools were passed until just before death. There was little loss of weight. Postmortem examination in both cases revealed a peritoneal sheet extending from the under surface of the liver to the hepatic flexure of the colon. This band constricted the lumen of the bowel enough to produce a gradual accumulation of material proximal to the obstruction, although some fecal material was able to pass. Since vomiting was not a prominent symp enough food was ingested to reach the obstructed and produce sufficient pressure to lead to necrosis the proximal portion of the bowel.

"Abdominal distention out of proportion to amount of vomiting, in spite of repeated bowel mo ments, should suggest to the physician the presence an obstructing band around the large bowel." surgical procedure in early cases is obviously siz (cutting bands). If intervention is decided upon late more radical operations will be necessary."

SHMIGELSKY, Chicag

HIRSCHSPRUNG'S DISEASE. MARGARET HAWKS Proc. Roy. Soc. Med. **36**:586 (Sept.) 1943.

Five cases of megacolon, selected from a series 14 cases, are reported to demonstrate certain points the differential diagnosis of Hirschsprung's disease its treatment by spinal anesthesia. The technic of spinal anesthesia is briefly described.

WILLIAMSON, New Orleans.

ANOREXIA IN INFANTS. M. BARACHUK, Rev. S puericult. Buenos Aires **9**:236 (July-Sept.) 1943.

Of 2,800 infants, newborn to 2 years old, examin in Buenos Aires, 381 were found to have anorexia. T causes of the anorexia were classified, and percentag were computed. The most common causes were infe tions of the respiratory tract (27 per cent), dystrophi (15 per cent) and irregularity in feeding, mostly d to prolonged breast feeding exclusively or inability accept new flavors (23 per cent). In the rest of t infants, except 10 per cent with anorexia of unknow cause, the condition was due to causes such as oth infections, stomatitis, teething, inappropriate surroun ings, pruriginous dermatitis and congenital heart disea

BRIBIESCA, Mexico.

APPENDICITIS IN INFANTS. A. VIDAL FREYRE a A. CABALLERO, Rev. Soc. puericult. Buenos Air **9**:262 (July-Sept.) 1943.

The authors present a review of the Argentinian li erature on appendicitis in infants under 2 years of ag Ten patients were seen and operated on, with a mor tality of 10 per cent.

They state that appendicitis in infants if diagnose and treated early has a good prognosis.

BRIBIESCA, Mexico.

GASTRIC TETANY IN AN INFANT. C. M. PINTO VALENTIN O. VISILLAC and R. A. CELLE, Rev. Soc puericult. Buenos Aires **9**:270 (July-Sept.) 1943.

The authors present a case of tetany with pyloric tumor and gastric waves. The condition improved after a pyloromyotomy had been performed. Blood transfusions were given and fluids administered paren terally and intravenously, but the patient died from a secondary intestinal infection.

BRIBIESCA, Mexico.

Nervous Diseases

TUBEROUS SCLEROSIS. ALEXANDER T. ROSS and WI LARD W. DICKERSON, Arch. Neurol. & Psychiat. **50**:233 (Sept.) 1943.

This paper reports a detailed clinical study of 2 cases and a microscopic study of 3 cases of tuberou sclerosis. The authors consider the condition a devel opmental tissue dysplasia which is frequently familial

hough most patients present idiocy, epilepsy and noma sebaceum, the variability of the clinical symp- s and the frequency of the condition are greater n is generally supposed. BEVERLY, Chicago.

HEAT GERM OIL (VITAMIN E) IN THE TREATMENT OF CONGENITAL NONOBSTRUCTIVE HYDROCEPHALUS. SIMON STONE, J. Pediat. **23**:194 (Aug.) 1943.

Nine children with congenital nonobstructive hydro- halus were treated with vitamin E in the form of eat germ oil for periods ranging from three years six months. The wheat germ oil was administered, a mixture with vitamin B complex, in doses of 1 4 cc. of the oil daily. In all the patients treated est or evident slowing of the progressive hydro- halus resulted. Improvement in visual acuity, reduc- in the severity of nystagmoid movements of the s, increase in mental alertness and improvement in scular tone and strength followed treatment. In the ldren with atrophy of the optic nerve who showed no ponse to visual stimuli before treatment was begun, ppearance of vision was demonstrated in that they ched out correctly for objects placed some distance m them.

A congenital disturbance of the hematoencephalic rrier as the cause of the hydrocephalus is suggested. tamin E apparently exerts a regulating effect on illary permeability and thus aids in the adjustment the mechanism for the secretion and absorption of nal fluid. Whether a vitamin E deficiency in the egnant mother was responsible for the development the hydrocephalus and improvement therefore fol- wed administration of the vitamin, or whether the provement was due to the nonspecific effect of cer- in factors present in vitamin E on the cell membrane the capillaries or on the blood constituents or was oduced indirectly through action on the pituitary, is t to be determined. The improvement in vision hibited by these patients can be explained by the echanical removal of excess fluid from the sheaths of e optic nerves. It is also probable that the myotropic d neurotropic factors contained in vitamin E played part in producing the improvement in muscular rength and tone.

The salutary effect of vitamin E on the rate of sorption of exudates in such divergent conditions as ultiple rheumatoid arthritis and rheumatoid myositis nd in selected cases of muscular dystrophy, cretinism nd hydrocephalus suggests one common denominator these conditions, namely, excessive hydration of tis- es caused by changes in cellular permeability, with tamin E apparently as an efficient nonspecific regulator this disturbance. The use of vitamin E in cases of ephrosis, nutritional edema and edema of unknown use also deserves a therapeutic trial.

SONTAG, Yellow Springs, Ohio.

THE EFFECT OF REPEATED LUMBAR PUNCTURES ON THE SPINAL FLUID IN NORMAL CHILDREN. FRANK K. BAUER, New Orleans M. & S. J. **96**:106 (Sept.) 1943.

The author performed two lumbar punctures within period of forty-eight hours on each of 16 normal hildren. There was no increase in cell count at the econd puncture. In the older children the pressure as slightly elevated at the second puncture and the alues of the chemical constituents were slightly lowered.

BERKLEY, Los Angeles.

CONGENITAL CEREBRAL ANEURYSMS LATERALIZED BY ELECTROENCEPHALOGRAPHY. B. WOODHALL and H. LOWENBACH, South. M. J. **36**:580 (Aug.) 1943.

The authors state that suggestive lateralization of the bleeding point in the affected hemisphere in "spontaneous" subarachnoid hemorrhage may be obtained by study of the electroencephalogram during the period of active hemorrhage. A more or less distinct asymmetry of amplitude, frequency and wave form between the tracings obtained from the two hemispheres is characteristic, with the abnormal record representing the hemisphere containing the bleeding point. This abnormal activity may be due to relative cerebral anoxemia, resulting from rupture of a congenital cerebral aneurysm, the common cause for such hemorrhages.

SCHLUTZ, Chicago.

Psychology and Psychiatry

ON THE ETIOLOGY AND THE PREVENTION OF MONGOLISM. CLEMENS E. BENDA, NEIL A. DAYTON and RUTH A. PROUTY, Am. J. Psychiat. **99**:822 (May) 1943.

The authors summarize and analyze the theories regarding the causation of mongolism. The three main possible etiologic factors are (1) hereditary determination, (2) damage to the germ plasm (paternal or maternal) and (3) a noxious factor within the mother during gestation. Each of these factors is carefully discussed and evaluated from evidence in the literature as well as from the personal observations of the authors.

If mongolism were due to hereditary factors, they reason, the incidence of mongolism should increase in proportion to the number of offspring in accordance with mendelian expectation. Although many mongoloid children have five to twelve siblings, multiple incidence of mongolism is not found in the families. Research on twins refutes the theory of germinal damage.

The authors state the belief that mongolism is due primarily to a pathologic condition in the maternal endocrine system during pregnancy. A careful study of the records of children with mongolism, the authors state, reveals that the birth of a mongoloid child may be expected or even predicted under certain circumstances. The mothers of many children with mongolism are found physiologically (endocrinologically) unprepared for pregnancy. It is advisable, therefore, to subject pregnant women to thorough biochemical and endocrine studies during the antepartum period. Such an approach might not prevent this disorder, but it might serve to reduce the number of persons with mongolism.

Pediatricians and obstetricians should read this excellent paper in its original form. JAHR, Omaha.

MEASUREMENT OF INTELLECTUAL FUNCTIONS IN THE ACUTE STAGE OF HEAD INJURY. JURGEN RUESCH and BURNESS E. MOORE, Arch. Neurol. & Psychiat. **50**:165 (Aug.) 1943.

The status of consciousness immediately after injury to the head was determined in 190 patients by subjecting them to a series of psychologic tests. Complete failure in all the tests, failure on the serial subtraction test alone and impaired performance on several tests represent three degrees of intellectual defect.

Patients with severe injuries to the head leading to intracranial hematoma, fracture of the skull and a bloody spinal fluid have a higher incidence of total

intellectual incapacity of varying duration than patients with short loss of consciousness only. Prolonged coma, delirium and confusion were much more frequent with the severe lesions and did not occur in patients with simple loss of consciousness.

Examination of 85 patients on three consecutive days by the "100 minus 7" test revealed that during this period accuracy of performance improves more than speed. Complete restitution, however, required a period of weeks.

BEVERLY, Chicago.

A PRELIMINARY SCALE FOR THE MEASUREMENT OF THE MENTALITY OF INFANTS. A. M. SHOTWELL and A. R. GILLILAND, Child Development **14**:167 (Sept.) 1943.

A preliminary scale for measuring the intelligence of babies during the first three months of life is described. Forty-two tests, chosen for objectivity in giving and scoring and suitability as measures of adaptability, were administered weekly to 41 children, beginning, in most instances, at the age of 1 week and continuing, when possible, through the twelfth week. A brief description of the tests, with methods of giving and scoring, is included. After the results had been analyzed, the items, with some changes and additions, were arranged into batteries, one each for the ages of 4 weeks, 8 weeks and 12 weeks, and the tests were administered to 94 babies. The mean percentages of items passed in each battery constitute tentative norms. Corrected coefficients of correlation of 0.72 and 0.80 between the results from the batteries for infants 4 weeks and 8 weeks old given at the same time to 4 week old babies and between the results from the batteries for infants 8 weeks and 12 weeks old given at the same time to the 8 week old babies are reported as rough indexes of reliability. The correlation between both batteries given at 4 weeks and again at 8 weeks was 0.47. Evidence thus far collected suggests that it will be possible to construct a valid and reliable measure of the intelligence of infants during the first three months of life, when the rate of mental growth is comparatively most rapid. Items to be retained ultimately are those showing (1) progression with age, (2) variability at any one age, (3) agreement with the total score and (4) correlation with intelligence quotients obtained at later ages.

PALMER, Washington, D. C.

Diseases of the Ductless Glands; Endocrinology

NATURE OF THE PITUITARY FACTOR STIMULATING MAMMARY DUCT GROWTH. J. J. TRENTIN, A. A. LEWIS, A. J. BERGMAN and C. W. TURNER, Endocrinology **33**:67 (Aug.) 1943.

That the pituitary hormonal complex contains some factor or factors involved in mammary growth is generally accepted. The present paper deals with the chemical nature (i. e., protein or lipid) of the pituitary factor responsible for the stimulation of growth of the mammary duct in the male mouse. When improved extraction procedures were used, the bulk of the activity of the fresh pituitary substance was recovered in the protein fraction rather than in the lipid fraction.

JACOBSEN, Buffalo.

EVIDENCE OF HYPOTHALAMIC CONTROL OF HYPOPHYSEAL GONADOTROPIC FUNCTIONS IN THE FEMALE GUINEA PIG. F. L. DEY, Endocrinology **33**:75 (Aug.) 1943.

By observing the effects of lesions produced in the hypophysis and in the hypothalamus, it is concluded that the hypothalamus and the median eminence may be concerned in the regulation of pituitary gonadotropic functions. It seems unlikely that they exert this control by nerve fibers that pass by way of the hypophysial stalk.

JACOBSEN, Buffalo.

EFFECTS OF THYROTROPIC HORMONE, GONADOTROPIC FACTOR, PITUITARY GROWTH SUBSTANCE AND INSULIN UPON THE PHOSPHATASE CONTENT OF RAT FEMURS. C. H. WHICHER and E. M. WATSON, Endocrinology **33**:83 (Aug.) 1943.

It has been shown that the administration of various glandular preparations, such as progesterone, testosterone, estradiol, thymus extract and thyroxine, is followed by an increase in the phosphatase content of the femur.

Further experiments, here reported, showed that both anterior pituitary extracts rich in the thyrotropic hormone and extracts rich in the gonadotropic factor, injected subcutaneously, caused an increase in the phosphatase content of both the diaphysis and the epiphyses.

The preparations of the growth-promoting factor of the anterior pituitary which were used did not exert a consistent influence on the bone phosphatase.

JACOBSEN, Buffalo.

GROWTH AND METABOLISM OF YOUNG HYPOPHYSECTOMIZED RATS FED BY STOMACH TUBE. LEO T. SAMUELS, ROGER M. REINECKE and KENNETH L. BAUMAN, Endocrinology **33**:87 (Aug.) 1943.

Young rats were hypophysectomized and then maintained, by feeding through a stomach tube, on a food intake which caused growth in litter mates used as controls.

Although intestinal absorption was good the hypophysectomized rats showed an abnormally slow increase in skeletal growth, 10 per cent of that in the controls; and a small increase in nitrogen storage, about 30 per cent of that in the controls.

JACOBSEN, Buffalo.

ANTAGONISM OF PITUITARY ADRENOCORTICOTROPIC HORMONE TO GROWTH HORMONE IN HYPOPHYSECTOMIZED RATS. WALTER MARX, MIRIAM E. SIMPSON, CHOH HAO LI and HERBERT M. EVANS, Endocrinology **33**:102 (Aug.) 1943.

It has been observed that pituitary extracts rich in the adrenocorticotropic hormone inhibited somatic growth in young castrated rats. The present communication reports the effect of extracts containing the adrenocorticotropic hormone on the action of the growth factor, in the absence of the pituitary.

These experiments indicate that the antagonism between adrenocorticotropic and growth hormones occurs in the absence of the pituitary gland. It cannot be attributed to a reduction in the food consumption. It would appear to result from opposing metabolic effects of these two factors.

JACOBSEN, Buffalo.

INCREASED SODIUM CHLORIDE AND WATER INTAKE OF NORMAL RATS TREATED WITH DESOXYCORTICOSTERONE ACETATE. KATHERINE K. RICE and CURT P. RICHTER, Endocrinology **33**:106 (Aug.) 1943.

The results of these experiments suggest that the primary effect of the administration of desoxycorticosterone in normal rats is an increased requirement of salt, resulting in an increased appetite for salt.

It is further suggested that the polydipsia of animals treated with desoxycorticosterone acetate on a high salt

take is a direct consequence of the latter rather than manifestation of a primary effect on water metabolism.

JACOBSEN, Buffalo.

FFECT OF THYROIDECTOMY ON RESISTANCE TO LOW ENVIRONMENTAL TEMPERATURE. C. P. LEBLOND and J. GROSS, Endocrinology **33**:155 (Sept.) 1943.

The role of the thyroid hormone in the resistance to old is confirmed by the observation that adult rats yroparathyroidectomized two weeks previously died ithin a week at 0 to 2 C. while normal, parathyroi-ctomized and thyroxin treated thyroidectomized rats urvived for several weeks at the same temperature.

Since the thyroidectomized rats lived in the cold for ne or several days in good condition and then became oribund and died, it would appear that the high level metabolism necessary for resisting cold could be eached but not maintained for more than a few days thyroidectomized animals.

JACOBSEN, Buffalo.

TUDIES ON THE RESPONSE OF HYPOPHYSECTOMIZED RATS TO INTRAPERITONEAL GLUCOSE INJECTIONS. SAMUEL JOSEPH, MALVINA SCHWEIZER and ROBERT GAUNT, Endocrinology **33**:161 (Sept.) 1943.

Severe disturbances in the distribution of electrolytes nd water in the body can be induced by the injection f solutions of dextrose intraperitoneally.

Death in both hypophysectomized and adrenalec-omized animals following injections of dextrose is ttributed to circulatory failure or shock. The classic ymptoms of shock observed were fall in blood pressure, emoconcentration, failure of peripheral circulation and educed body temperature. These features of the syn-rome developed in essentially similar fashion in both ypophysectomized and adrenalectomized animals, al-hough perhaps somewhat more rapidly in the latter. his set of symptoms, indeed, was the clearly signifi-ant differential between normal and hypophysectomized ats.

Since these symptoms were relieved by administra-ion of adrenal cortical extract, it is concluded that the eficiencies in the hypophysectomized animals were due o atrophy and hypofunction of the adrenal cortices.

From a variety of experiments it is apparent that drenal cortical hormone is essential for the prevention f circulatory failure following stress. These experi-ents afford another example of susceptibility to circu-atory failure in the absence of normal adrenal cortical unction, in this case the primary deficiency being that f the pituitary adrenotropic hormone.

JACOBSEN, Buffalo.

FFECT OF CONTINUED ORAL ADMINISTRATION OF DIETHYLSTILBESTROL ON BLOOD PRESSURE, HEART RATE AND RESPIRATION OF ALBINO RATS. CHARLES S. MATTHEWS, FREDERICK E. EMERY and PAUL L. WEYGANDT, Endocrinology **33**:177 (Sept.) 1943.

Elsewhere there has been published evidence which ndicated that diethylstilbestrol is capable of producing ypertension in rats. In the experiments reported here 5 adult oophorectomized rats and 35 normal male rats eceived by stomach tube 1 mg. of diethylstilbestrol in lkaline aqueous medium daily for periods up to one hundred days. The results indicate no deviation from the normal range of values for the blood pressure.

JACOBSEN, Buffalo.

THE INTERRELATIONS OF SERUM LIPIDS IN PATIENTS WITH THYROID DISEASE. JOHN P. PETERS and EVELYN B. MAN, J. Clin. Investigation **22**:715 (Sept.) 1943.

Although the level of cholesterol in the serum rises when the thyroid gland is removed and falls when active thyroid preparations are given, normal concentrations of cholesterol may be found in the serum of patients with hyperthyroidism or with thyroid deficiency, because the level to which cholesterol falls or rises with these disorders is roughly related to the normal concentration of cholesterol of the affected subject.

The ratios of free to total cholesterol and of cholesterol to lipid phosphorus are not affected by disorders of thyroid function. The latter ratio, within the normal range of cholesterol, is the same for patients with normal, excessive or deficient thyroid activity, varying with the concentration of cholesterol. As the concentration of cholesterol falls below this range in hyperthyroidism the ratio diminishes as it does in malnutrition; as the concentration of cholesterol rises above this range the ratio rises to describe a continuous curve.

There is no relation between the level of cholesterol and the level of neutral fat in the serum.

[FROM THE AUTHORS' SUMMARY.]

MACROSOMIA, CARDIAC HYPERTROPHY, ERYTHROBLASTOSIS AND HYPERPLASIA OF THE ISLANDS OF LANGERHANS IN INFANTS BORN TO DIABETIC MOTHERS. HERBERT C. MILLER and HUGH M. WILSON, J. Pediat. **23**:251 (Sept.) 1943.

Roentgen examinations of the hearts of 10 infants born to mothers with diabetes mellitus showed that during the first ten days of life there is a significant increase in the size of this organ. Follow-up roentgenograms of these infants revealed that the size of the heart had assumed normal proportions by the end of the sixth week of life in almost all the cases. Postmortem examination of the hearts of 18 infants born to mothers with diabetes demonstrated that in about half the infants the weight of the heart was abnormally increased, sometimes to as much as two or three times the expected weight. An abnormally heavy heart occurred more usually in an infant who weighed over 4,000 Gm. at birth. In addition to the cardiac changes there was an increase in the amount of erythropoietic tissue in the liver in about half of the infants examined at autopsy. In 3 of the 18 postmortem examinations macrosomia, cardiac hypertrophy, hyperplasia of the islands of Langerhans and excessive erythropoiesis in the liver were observed. These somatic and visceral changes occurred in some infants whose mothers were not diabetic either before or at the time the infants were born but who, subsequent to the delivery, became diabetic. The authors also observed these same changes in body weight and alterations in the heart, liver and pancreas in infants with erythroblastosis fetalis. The relationship between the cardiac hypertrophy and the symptoms in infants born to diabetic mothers is discussed. Also the possible relationship between diabetes mellitus and erythroblastosis fetalis is considered.

SONTAG, Yellow Springs, Ohio.

Book Reviews

A Hundred Years of Medicine. By D. C. Haagensen and E. B. Lloyd. Price, $3.75. Pp. 444, with 42 illustrations. New York: Sheridan House, Inc., 1943.

This book was written with the hope, to quote from the preface of the English edition, "that it may prove of value not only to the layman, for whom it is primarily intended, but also to those medical practitioners and students who have not found time for my specialized study of the history of medicine." Here is a medical book for which one can earnestly hope the widest possible circulation. It cannot be endorsed too highly; so far as this reviewer knows, it is in a class by itself. It meets a need that is real and that other publications by medical columnists and by lay and professional writers for the laity do not meet. Its purpose is not to discuss isolated medical subjects but to tell the intelligent layman and the alert physician and student just what modern scientific medicine is and how it developed during the last hundred years. It is a fascinating story, well told. If every layman read this book there would be a better understanding of the things physicians are trying to do and the reasons for their attitudes toward the various aberrant practitioners and cultists. Of course the cultural value of such knowledge is unquestionable.

The book is written in a clear, simple style so that the layman need not be apprehensive about getting beyond his depth. Chemical terms are avoided as far as possible unless their meanings are evident from the context, and explanations are offered when necessary. The medical reader will not find that this in any way detracts from the historic and scientific accuracy or from the readability. There are probably few physicians who will not find many interesting and instructive facts that they have never known or have forgotten. Especially interesting are the brief biographic data on some of the great men and women who have helped to make modern medicine what it is.

There are forty-four well chosen and well produced illustrations and a comprehensive bibliography.

The book was first written by Dr. Lloyd, an English "specialist in public health." The American edition retains about one third of the English edition, with slight modifications to fit the American scene; the remainder of the book has been entirely rewritten by Dr. Haagensen, a surgeon and pathologist on the faculty of the Columbia University School of Medicine.

The book is divided into four parts. Part I contains about sixty pages and is an introductory review of the development of medicine, surgery and hygiene up to the nineteenth century. Part II, of about 160 pages, deals with medical science during the last hundred years, under the following topics: pathology, diagnosis, the germ theory, chemotherapy, tuberculosis, the vitamins, pernicious anemia, diabetes, nephritis and diseases of the heart and lungs. In part III, about 140 pages, the authors discuss the advances in surgery during the last one hundred years, taking up anesthesia, surgical infection, control of hemorrhage and shock, obstetrics and gynecology, genitourinary surgery, orthopedics, neurosurgery, thoracic surgery, ophthalmology, otology, rhinology and laryngology, the use of radium and the training of surgical nurses. Part IV, about 80 pages, deals with the importance of social service and of infant welfare, including their effects on longevity and the medical and economic situation brought about by the greatly increased number of older people. Under "The Doctors' Dilemma," medical education, specialization, the high cost of medical care, medical insurance, socialized medicine and group practice are considered.

A book of this kind is necessarily limited in its scope, but it does seem strange, and a matter of regret, that the marvelous development of pediatrics is wholly ignored. It is to be hoped that there will be many new editions and that in them this will be given due attention.

Clinical Diagnosis by Laboratory Examinations. By John A. Kolmer. Price, $8. Pp. 1,239, with illustrations. New York: D. Appleton, Century Co., Inc., 1943.

This book, which is not a new edition of Kolmer and Boerners' "Approved Laboratory Technic," has been assembled entirely by Dr. Kolmer and is intended primarily for teaching in medical schools, as well as for the use of physicians and pathologists who need to correlate the clinical interpretations of laboratory examinations and to evaluate their practical application in the diagnosis of disease.

Of the three parts of the book, the first, of 642 pages, is concerned with the clinical interpretation of laboratory examinations. It includes many useful charts summarizing abnormal results and observations and their various causes and giving normal values with their physiologic bases. This inclusive survey embraces the fields of hematology, physiologic chemistry, toxicology, bacteriology, immunology, parasitology, mycology, serology, allergy, endocrinology and vitamins and biopsy.

The second part, of some 330 pages, deals with the practical applications of laboratory examinations in clinical diagnosis, classifying the diseases of various organs and systems, interpreting the laboratory diagnoses and indicating the tests of value. Excellent summaries of the diagnoses of the arthritides, brucellosis, the steatorrheas and the venereal diseases are among these chapters. Some material found in the first part of the book is repeated.

The last, and smallest, section is concerned with technic; usually but one accepted method of laboratory procedure is given.

Necessarily in such a comprehensive book there are subjects treated rather summarily, such as parasitology, virus diseases and endocrinology. While numerous colored plates are devoted to cutaneous reactions, there is a lack of good illustrations in the section on hematology. There are an excellent index and an adequate bibliography.

This ambitious book will no doubt stimulate some adverse criticism, the well informed physician contending that it is sketchy and not always accurate, and the laboratory technician that there are few methods and those few described too briefly. However, as a source of reference for the average diagnostician, laboratory worker or teacher it will be appreciated by many.

The Year Book of Industrial and Orthopedic Surgery, 1943. Edited by Charles F. Painter, M.D. Price, $3. Pp. 440, with 306 illustrations. Chicago: The Year Book Publishers, Inc., 1943.

This edition of the Year Book of Industrial and Orthopedic Surgery is made up of pertinent reviews of time-saving value. Material of interest to pediatricians and general practitioners as well as to orthopedic and industrial surgeons is included. Numerous contributions from the military and naval services should prove valuable to civilian practitioners and to surgeons of the armed forces. Since the supply of medical literature from European and Asiatic countries now engaged in war has been almost totally cut off, the sources of subject matter are primarily North and South America. A number of reviews from British journals are presented.

The major portion of the book covers orthopedic surgery, while the second part deals with industrial medicine and surgery. The orthopedic subject matter is arranged under such headings as fractures and traumatic dislocations, arthritis, tuberculosis, osteomyelitis, inflammatory conditions and poliomyelitis. The industrial material includes problems of organization and the war, absenteeism, fatigue, respiratory and cardiac conditions and specific hazards.

Of particular interest are articles dealing with internal and external fixation of fractures, the repair of bone in the presence of foreign fixation materials, therapy for arthritis, especially studies on the use of activated ergosterol (ertron), vitamins, gold salts and bee venom, the conservative treatment of acute osteomyelitis, ossifying lesions about tendons and bursae, the Kenny treatment of poliomyelitis, lesions of the intervertebral disks, pathologic conditions of the feet and operative technic. Numerous problems in industry, of current and future interest, are discussed.

These well selected reviews present the practical essentials of a large mass of literature. Individual articles are well written, brief and yet complete. The 1943 year book is a means whereby the harrassed practitioner can keep abreast of significant advances in industrial and orthopedic surgery, in spite of demands made on him by the war.

Child Development: Physical and Psychological Growth Through the School Years. By Marian E. Breckenridge, M.S., and E. Lee Vincent, Ph.D. Price, $3.25. Pp. 592, with 37 illustrations. Philadelphia: W. B. Saunders Company, 1943.

This excellent presentation has been designed to bring together the current knowledge and philosophies relating to the pattern of total, or "organismic," growth of the infant and child. Emphasis is placed on the factors conducive to optimum response. The material is written in simple yet effective style. The volume should prove of value for every student of childhood, whether he is a physician, teacher, hygienist, welfare worker or parent. The authors not only portray the manner of organismic growth but show how its processes may be affected favorably or unfavorably by specific factors in the environment. The careful reader will gain insight into the superficial aspects of nutrition and child psychology; the scope of the material covered makes it impossible to offer the detailed specific information the advanced student in these subjects would desire. As a guide toward attainment of favorable nutritional and mental hygiene, however, the scope of the book is adequate.

The volume is divided into fifteen chapters. Each chapter is concluded by series of questions and of generic references to the literature, designed to aid the more detailed study of the material presented. The chapters are subdivided as to content, with convenient subtitles. From the viewpoint of the mature student, it would be useful if chapter summaries were provided as well. Records of illustrative cases are interspersed frequently. The material is well indexed, and the terminal bibliography is extensive and up-to-date.

Every physician whose activities bring him into association with children needs the insight which this book provides. The volume can be used either as a source of general information or for reference on the effects of specific environmental conditions.

Care and Feeding of Children. By L. Emmett Holt Jr., M.D. Sixteenth edition. Price, $2. Pp. 321, with 2 illustrations. New York: D. Appleton-Century Company, Inc., 1943.

This is the sixteenth edition of a book for mothers written by L. Emmett Holt, M.D., in 1894 and revised and enlarged by his son, L. Emmett Holt Jr., M.D.

The book is fairly broad in scope, covering the care, growth and feeding (natural and artificial) of children. There are sections on the care of feeble and premature children and older children, the handling of behavior problems and the prevention and treatment of the common ailments of children.

The book is written in question and answer style, which seems to break the continuity of thought. However, the answers are simple, concise and scientifically correct. The style is especially effective in the section on behavior problems as it answers the questions that arise in almost every family.

The scope of this book is broad enough to include answers to most mothers' questions in regard to the day by day life of the child, but it does not intrude too far into the domain of the physician. It is truly a complete reference library for mothers.

The section on infant feeding is probably more elaborate than necessary for the layman. It describes too many varied types of feeding.

The part on behavior problems seems to be especially well written. It is scientific and suggests solutions to the problems about which mothers are so frequently puzzled such as the best way to handle certain difficult situations. The terminology is pleasingly simple and does not attempt to make pseudopsychiatrists of the mothers.

This volume is a good book of its type, and it can be recommended when such a book is requested.

The Health of Children in Occupied Europe. Edited by The International Labour Organisation. Price, 25 cents. Pp. 37, not illustrated. Montreal, Canada: La Patrie Publishing Company Limited, 1943.

This small pamphlet contains a tremendous amount of information, all of which is of interest to the average physician in the United States, for the situation among children in Europe is beyond his comprehension. The pamphlet deals mainly with the causes of the deficiencies in the diets. These are only part of the picture; the living conditions, the spread of disease and all the worst aspects and consequences of war are pictured in these pages. The facts raise the question as to how the amount of food necessary to rectify these conditions after the war can be supplied and transported.

Directory of Pediatric Societies *

INTERNATIONAL

International Association of Preventive Pediatrics

President: Prof. S. Monrad, Dronning Louises Børnehospital, Copenhagen, Denmark.
Secretary: Dr. Daniel Oltramare, 15 Rue Lévrier, Geneva, Switzerland.

International Congress of Pediatrics

President: Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn.
Secretary-Treasurer: Dr. Charles F. McKhann, University Hospital, Ann Arbor, Mich.
Canadian Committee:
Chairman: Dr. Alan Brown, Hospital for Sick Children, 67 College St., Toronto.
Secretary: Dr. H. P. Wright, 1509 Sherbrooke St. W., Montreal.
Place: Boston. Time: Postponed indefinitely.

International Congress for the Protection of Infancy

Secretary: Prof. G. B. Allaria, Corso Bramante 29, Torino 120, Italy.

FOREIGN

Argentine Pediatric Society of Buenos Aires

President: Dr. Martin Ramón Arana, 1809 Rodriguez Peña, Buenos Aires.
General Secretary: Dr. Alfredo Larguia, Cerrito 1179, Buenos Aires.

Associação Paulista de Medicina, Section on Pediatrics

President: Dr. Vicente Lara.
First Secretary: Dr. Armando de Arruda Sampaio.
Second Secretary: Dr. Paulo de Barros Franca, Av. Brigadeiro Luiz Antonio 393, 1° Andar, São Paulo, Brazil.

British Paediatric Association

President: Prof. L. G. Parsons, 58 Calthorpe Rd., Five Ways, Birmingham.
Secretary: Dr. Donald Paterson, 27 Devonshire Pl., London, W. 1.

Danish Pediatric Society

President: Dr. E. Lenstrup, Copenhagen.
Secretary: Dr. E. Gjørup, Dronning Louises Børnehospital, Copenhagen.

Nederlandische Vereeniging voor Kindergeneeskunde

President: Dr. J. H. G. Carstens, Servaasbolwerk 14a, Utrecht.
Secretary: Dr. R. P. van de Kasteele, Laan van Poot 340, 's Gravenhage.
Place: Different places. Time: Three times a year.

Paediatrický Spolok na Slovensku

President: Dr. A. J. C. Chura, Lazaretská 11, Bratislava.
Secretary: Dr. P. Rados, Lazaretská 6, Bratislava.
Place: Pediatric Clinic, University Bratislava. Time: Six times a year.

Royal Society of Medicine, Section for the Study of Disease in Children

President: Dr. E. A. Cockayne, 98 Harley St., London W. 1, England.
Secretary: Dr. R. Lightwood, 86 Brook St., London W. 1, England.
Place: 1 Wimpole St., London. Time: Fourth Friday of each month, 4:15 p. m.

Palestine Jewish Medical Association, Section of Physicians of Children's Diseases

President: Prof. S. Rosenbaum, 26 Bialkstr., Tel Aviv
Secretary: Dr. A. Brünn, 9 Maazestre, Tel Aviv.

Sociedad Cubana de Pediatria

President: Dr. Angel A. Aballí Arellano, 17 No. 60 Vedado, Habana.
Secretary: Dr. Julio G. Cabrera Calderin, Hospital Mercedes L y 21 (Vedado), Box 2430, Habana.
Place: Cátedra de Clinica Infantil, Hospital Mercedes Habana. Time: Last Wednesday of every month.

Sociedad Mexicana de Pediatria

President: Dr. Fernando López Clares, 12/a. Medellin 191, Mexico.
Secretary: Dr. Jesus Gómez Pagola, Versalles 6 Mexico.

Sociedad Venezolana de Puericultura y Pediatria

President: Dr. E. Santos Mendoza.
Secretary: Dr. P. Oropeza, Hospital de Niños, Caracas

Société de Pédiatrie de Paris

President: Dr. B. Weill-Hallé, 49 Avenue Raymond Poincare, Paris, France.
Secretary: Dr. Jean Hallé, 10 bis Rue Pré aux Clercs Paris, France.
Place: Hôpital des Enfants Malades, 49 Rue de Sèvres Time: 4:30 p. m., third Thursday of every month.

Uruguyan Society of Pediatrics

President: Dr. Jose Alberto Praderi, Eduardo Acevedo 1132, Montevideo.
Secretary: Dr. Alfredo Ramon Guerra, Paysandú 824 Montevideo.

NATIONAL

American Medical Association, Scientific Assembly, Section on Pediatrics

Chairman: Dr. John Aikman, 184 Alexander St. Rochester, N. Y.
Secretary: Dr. Gilbert J. Levy, 188 S. Bellevue Blvd. Memphis, Tenn.

American Academy of Pediatrics

President: Dr. Franklin P. Gengenbach, 1850 Gilpin St., Denver, Colo.
Secretary: Dr. Clifford G. Grulee, 636 Church St. Evanston, Ill

* Secretaries of societies are requested to furnish the information necessary to make this list complete and to keep it up to date.

American Hospital Association, Children's Hospital Section

Chairman: Dr. Joelle C. Hiebert, 299 Main St., Lewiston, Maine.
Secretary: Dr. W. Franklin Wood, McLean Hospital, Waverly, Mass.

American Pediatric Society

President: Dr. James L. Gamble, 300 Longwood Ave., Boston.
Secretary-Treasurer: Dr. Hugh McCulloch, 325 N. Euclid Ave., St. Louis.

Canadian Society for the Study of Diseases of Children

President: Dr. R. R. Struthers, 906 Drummond Medical Bldg., Montreal.
Secretary-Treasurer: Dr. Elizabeth Chant Robertson, Hospital for Sick Children, Toronto.

Society for Pediatric Research

President: Dr. Joseph A. Johnston, Henry Ford Hospital, Detroit.
Secretary: Dr. Mitchell I. Rubin, 1740 Bainbridge St., Philadelphia.

SECTIONAL

Intermountain Pediatric Society

President: Dr. Eugene Smith, 385–24th St., Ogden, Utah.
Secretary-Treasurer: Dr. W. C. Cheney, 837 Boston Bldg., Salt Lake City.
Place: Salt Lake City General Hospital. Time: First Thursday of each month, 8 p. m.

New England Pediatric Society

President: Dr. Warren R. Sisson, 319 Longwood Ave., Boston.
Secretary-Treasurer: Dr. James Marvin Baty, 1101 Beacon St., Brookline, Mass.
Place: Boston Medical Library. Time: Four meetings a year, occurring from September to May.

North Pacific Pediatric Society

President: Dr. M. L. Bridgeman, 1020 S. W. Taylor St., Portland, Ore.
Secretary: Dr. C. G. Ashley, 833 S. W. 11th Ave., Portland, Ore.

Northwestern Pediatric Society

President: Dr. Arild E. Hansen, University of Minnesota, Minneapolis.
Secretary-Treasurer: Dr. Albert V. Stoesser, 205 W. University Hospital, Minneapolis.
Place: Minneapolis, St. Paul, Duluth and Rochester. Time: January, April, July and October.

Rocky Mountain Pediatric Society

President: Dr. G. R. Fisher, 23 E. Pikes Peak Ave., Colorado Springs, Colo.
Secretary: Dr. Joseph H. Lyday, 1850 Gilpin St., Denver.

Southern Medical Association, Section of Pediatrics

Chairman: Dr. William Weston Jr., 1428 Lady St., Columbia, S. C.
Secretary. Dr. Angus McBryde, 604 W. Chapel Hill St., Durham, N. C.

STATE

Alabama Pediatric Society

President: Dr. Amas Gipson, 948 Forrest Ave., Gadsen.
Secretary-Treasurer: Dr. Ruth Berrey, 2021–6th Ave. N., Birmingham.

Arizona Pediatric Society

President: Dr. Vivian Tappan, San Clemente, Tucson.
Secretary: Dr. Hilda Kroeger, Arizona State Health Dept. (Maternal and Child Welfare Division), Phoenix.

Arkansas State Pediatric Association

Chairman: Dr. C. B. Billingsley, 1425 N. 11th St., Fort Smith.
Secretary: Dr. R. E. Weddington, 1425 N. 11th St., Fort Smith.

California State Medical Society, Section on Pediatrics

Chairman: Dr. William C. Deamer, University of California Hospital, San Francisco.
Secretary: Dr. Charles W. Leach, 2000 Van Ness Ave., San Francisco.

Florida State Pediatric Society

President: Dr. Ludo Von Meysenbug, Box 3356, Daytona Beach.
Secretary: Dr. Robert Blessing, 409 Blount Bldg., Ft. Lauderdale.
Place: Concurrent with state association meeting at time of convention.

Georgia Pediatric Society

President: Dr. T. F. Davenport, 104 Ponce de Leon Ave. N. E., Atlanta.
Secretary-Treasurer: Dr. Don F. Cathcart, 478 Peachtree St. N. E., Atlanta.

Hezekiah Beardsley Pediatric Club of Connecticut

President: Dr. Edward T. Wakeman, 129 Whitney Ave., New Haven.
Secretary: Dr. Herman Yannet, Southbury Training School, Southbury.
Time: Three meetings a year.

Illinois State Medical Society, Section on Pediatrics

Chairman: Dr. Craig D. Butler, 715 Lake St., Oak Park.
Secretary: Dr. A. J. Fletcher, 139 N. Vermilion, Danville.

Indiana State Pediatric Society

President: Dr. K. T. Knode, 1105 E. Jefferson Bldg., South Bend.
Secretary-Treasurer: Dr. Mathew Winters, 621 Hume Mansur Bldg., Indianapolis.
Time: Two meetings a year.

Iowa Pediatric Society

President: Dr. Mark L. Floyd, Children's Hospital, Iowa City.
Secretary-Treasurer: Dr. James Dunn, Davenport Bank Bldg., Davenport.

MEDICAL SOCIETY OF STATE OF NEW YORK, SECTION ON PEDIATRICS

Chairman: Dr. A. Clement Silverman, 608 E. Genesee St., Syracuse.
Secretary: Dr. Albert G. Davis, 307 Gas and Electric Bldg., Utica.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, PEDIATRIC SECTION

Chairman: Dr. Elwood W. Stitzel, 403 Central Trust Bldg., Altoona, Pa.
Secretary: Dr. P. F. Lucchesi, Philadelphia Hospital, Philadelphia.

MICHIGAN STATE MEDICAL SOCIETY, PEDIATRIC SECTION

Chairman: Dr. Charles F. McKhann, University Hospital, Ann Arbor.
Secretary: Dr. Mark F. Osterlin, Central Michigan Children's Clinic, Traverse City.

MISSISSIPPI STATE PEDIATRIC SOCIETY

President: Dr. Harvey F. Garrison Jr., 315 E. Capitol Pl., Jackson.
Secretary: Dr. Guy Verner, 126 N. Congress St., Jackson.

NEBRASKA PEDIATRIC SOCIETY

President: Dr. E. W. Hancock, 820 Sharp Bldg., Lincoln.
Secretary-Treasurer: Dr. John M. Thomas, 1102 Medical Arts Bldg., Omaha.
Place: As announced by committee. Time: Third Thursday of each month from October to June, inclusive. Dinner at 6 p. m.

NEW HAMPSHIRE PEDIATRIC SOCIETY

President: Dr. MacLean J. Gill, 14 N. State St., Concord.
Secretary-Treasurer: Dr. Ursula G. Sanders, 46 Pleasant St., Concord.
Time: Twice yearly.

NORTH CAROLINA PEDIATRIC SOCIETY

President: Dr. Arthur H. London, 1105 W. Main St., Durham.
Secretary: Dr. Jay M. Arena, 604 W. Chapel Hill St., Durham.

OKLAHOMA STATE PEDIATRIC SOCIETY

President: Dr. Ben H. Nicholson, 301 N. W. 12th St., Oklahoma City.
Secretary: Dr. Luvern Hays, 108 W. 6th St., Tulsa.
Place: Oklahoma Club. Time: 6:30 p. m., fourth Friday of each alternate month from September to May, inclusive.

SOUTH CAROLINA PEDIATRIC SOCIETY

President: Dr. Lonita Boggs, 301 E. Coffee St., Greenville.
Secretary-Treasurer: Dr. Hilla Sheriff, Wade Hampton Office Bldg., Columbia.

TEXAS PEDIATRIC SOCIETY

President: Dr. F. H. Lancaster, 4409 Fannin St., Houston.
Secretary-Treasurer: Dr. John E. Ashby, 3610 Fairmount Ave., Dallas.

VIRGINIA PEDIATRIC SOCIETY

President: Dr. Edwin A. Harper, 301 Rivermont Ave., Lynchburg.
Secretary: Dr. Emily Gardner, 1100 W. Franklin St., Richmond.

WEST VIRGINIA STATE MEDICAL SOCIETY, SECTION ON PEDIATRICS

President: Dr. Andrew Amick, 1021 Quarrier St., Charleston.
Secretary: Dr. A. A. Shawkey, Professional Bldg., Charleston.

LOCAL

ACADEMY OF MEDICINE OF CLEVELAND PEDIATRIC SECTION

Chairman: Dr. J. D. Nourse, 10515 Carnegie Ave., Cleveland.
Secretary: Dr. I. B. Silber, 10465 Carnegie Ave., Cleveland.
Place: Cleveland Medical Library Bldg. Time: October, December, February and April.

ACADEMY OF MEDICINE, TORONTO, SECTION OF PEDIATRICS

President: Dr. I. Nelles Silverthorne, 170 St. George St., Toronto, Canada.
Secretary: Dr. G. P. Hamblin, 2333 Bloor St. W., Toronto, Canada.

BRONX PEDIATRIC SOCIETY

President: Dr. Harry J. Cohen, 1975 Walton Ave., New York.
Secretary: Dr. Walter Levy, 12 E. 88th St., New York.
Place: Concourse Plaza Hotel, 161st St., and Grand Concourse. Time: Second Wednesday of each month except June, July, August and September.

BROOKLYN ACADEMY OF PEDIATRICS

President: Dr. Harry A. Naumer, 37-8th Ave., Brooklyn.
Secretary: Dr. Lewis A. Koch, 62 Pierrepont St., Brooklyn.
Place: Granada Hotel. Time: Fourth Wednesday of October, November, February, March and April.

BUFFALO PEDIATRIC SOCIETY

President: Dr. A. Wilmot Jacobsen, 187 Bryant St., Buffalo N. Y.
Secretary: Dr. Richard A. Downey, 786 Forest Ave., Buffalo, N. Y.
Place: Children's Hospital, 219 Bryant St. Time: 8:30 p. m., first Monday of each month from September to June.

CENTRAL NEW YORK PEDIATRIC CLUB

President: Dr. Edward J. Wynkoop, 501 James St., Syracuse.
Secretary: Dr. Frank J. Williams, 58 S. Swan St., Albany.
Places:: Various cities in New York. Time: Third Tuesday of April and September.

CHICAGO PEDIATRIC SOCIETY

President: Dr. Morley D. McNeal, 2 N. Sheridan Rd., Highland Park, Ill.
Secretary: Dr. Henry G. Poncher, 1819 W. Polk St., Chicago.
Place: Children's Memorial Hospital, 710 Fullerton Ave. Time: Third Tuesday of each month, October to May, Inclusive.

Cincinnati Pediatric Society

Secretary: Dr. T. Selkirk, 3530 Reading Rd., Cincinnati.
Place: Children's Hospital, Elland Ave., Cincinnati. Time: On call.
President: Dr. Lloyd K. Felter, 3144 Jefferson Ave., Cincinnati.

Dallas Pediatric Society

President: Dr. John E. Ashby, 3610 Fairmount Ave., Dallas, Texas.
Secretary-Treasurer: Dr. Gladys J. Fashena, 4585 Belfort, Dallas, Texas.
Place: Bradford Baby Hospital. Time: 1 p. m., second and fourth Saturdays of each month.

Detroit Pediatric Society

President: Dr. Hugh Lewis, Detroit, Mich.
Secretary: Dr. John J. Pollack, 622-26 Maccabees Bldg., Detroit, Mich.
Place: Wayne County Medical Society. Time: 8:30 p. m., first Wednesday of each month from October to June, inclusive.

Fulton County Medical Society, Pediatrics Section (Atlanta, Ga.)

Chairman: Dr. Don F. Cathcart, 478 Peachtree St. N. E., Atlanta.
Secretary: Dr. Harry Lange, 478 Peachtree St., N. E., Atlanta.
Place: Academy of Medicine, 38 Prescott St. N. E. Time: Second Thursday of each month from October to April, 8 p. m.

Houston Pediatric Society

President: Dr. Raymond Cohen, 2300 Caroline St., Houston, Texas.
Secretary: Dr. Betty Moody, 526 Richmond Rd., Houston, Texas.
Place: College Inn, Houston. Time: Fourth Monday of each month.

Kansas City (Missouri) Pediatric Society

President: Dr. Edwin H. Schorer, 1103 Grand Ave., Kansas City.
Secretary: Dr. H. E. Petersen, Kirkpatrick Bldg., St. Joseph, Mo.
Place: Kansas City General Hospital. Time: On call.

Los Angeles County Medical Association, Pediatric Section

President: Dr. Oscar Reiss, 2200 W. 3d St., Los Angeles.
Secretary-Treasurer: Dr. Elena Boder, 1830½ Lucille Ave., Los Angeles.
Place: Los Angeles County Medical Headquarters, 1925 Wilshire Blvd. Time: Second Monday of February, April, June, October and December.

Medical Society of the County of Kings and the Academy of Medicine of Brooklyn, Pediatric Section

President: Dr. Abraham M. Litvak, 1145 Eastern Parkway, Brooklyn.
Secretary: Dr. Harold Levy, 750 St. Marks Ave., Brooklyn.
Place: 1313 Bedford Ave., Brooklyn. Time: 9:00 p. m., fourth Monday of each month, October to April, inclusive.

Medical Society of the County of Queens, Inc., Section on Pediatrics

Chairman: Dr. Meyeron Coe, 217-02-91st Ave., Queens Village, N. Y.
Secretary-Treasurer: Dr. Edith A. Mittell, 144-38th Ave., Flushing, N. Y.
Place: Queens County Medical Bldg., Forest Hills, N. Y. Time: Third Monday of October, January, March and May.

Medical Society of the District of Columbia, Section on Pediatrics

President: Dr. Harry A. Spigel, 2647 Connecticut Ave., Washington, D. C.
Secretary-Treasurer: Dr. Perry W. Gard, 2520 Woodley Rd., Washington, D. C.
Place: Medical Society Bldg., 1718 M St. N. W. Time: 8 p. m., fourth Thursday of every month.

Memphis Pediatric Society

President: Dr. F. T. Mitchell, 376 S. Bellevue Ave., Memphis, Tenn.
Secretary-Treasurer: Dr. Harry Jacobson, 1193 Madison Ave., Memphis, Tenn.
Place: John Gaston Hospital. Time: Quarterly.

Milwaukee Pediatric Society

President: Dr. John H. Reynolds, 1628 W. Wisconsin Ave., Milwaukee.
Secretary-Treasurer: Dr. F. J. Mellencamp, 324 E. Wisconsin Ave., Milwaukee.
Place: Milwaukee Athletic Club. Time: Second Wednesday of each alternate month, beginning with February.

New York Academy of Medicine, Section of Pediatrics

Chairman: Dr. Howard Craig, 175 E. 79th St., New York.
Secretary: Dr. Alfred E. Fischer, 73 E. 90th St., New York.
Place: New York Academy of Medicine, 2 E. 103d St. Time: Second Thursday of each month from October to May, inclusive, 8:30 p. m.

Northern California Affiliates

President: Dr. Crawford Bost, 400 Post St., San Francisco.
Secretary: Dr. William A. Reilly, 384 Post St., San Francisco.
Time: Second Thursday of September, November, January, March and May.

Oklahoma City Pediatric Society

President: Dr. William M. Taylor, 1200 N. Walker St., Oklahoma City.
Secretary: Dr. G. R. Felts, 625 N. W. 10th St., Oklahoma City.
Place: Oklahoma Club. Time: Third Thursday of each month.

Philadelphia Pediatric Society

President: Dr. Carl Fischer, Greene and Coulter Sts., Germantown, Philadelphia.
Secretary: Dr. Sherman Little, 1740 Bainbridge St., Philadelphia.
Place: College of Physicians, 19 S. 22d St. Time: Second Tuesday in January, March, May and November.

Pittsburgh Pediatric Society

President: Dr. John D. Sturgeon Jr., 22 N. Gallatin Ave., Uniontown, Pa.

Secretary-Treasurer: Dr. C. J. Stoecklein, Medical Arts Bldg., Pittsburgh.

Place: Pittsburgh Academy of Medicine. Time: Second Friday, alternate month from October to June, inclusive.

Richmond Pediatric Society

President: Dr. Stanley Meade, 913 Floyd Ave., Richmond, Va.

Secretary-Treasurer: Dr. Louise Galvin, 214 S. Boulevard, Richmond, Va.

Place: Richmond Academy of Medicine, 1200 E. Clay St. Time: 8 p. m., third Thursday of each month, except June, July and August.

Rochester Pediatric Society

President: Dr. Herbert Soule, 122 Rutgers St., Rochester, N. Y.

Secretary-Treasurer: Dr. Jerome Glaser, 300 S. Goodman St., Rochester, N. Y.

Place: Rochester Academy of Medicine or arrangement by program committee. Time: Third Friday of each month from October to May.

St. Louis Pediatric Society

President: Dr. Jerome Diamond, 508 N. Grand Ave., St. Louis.

Secretary-Treasurer: Dr. Mary A. McLoon, 408 Humboldt Bldg., St. Louis.

Place: St. Louis Medical Society Bldg. Time: First Friday of each month from November to June.

Seattle Pediatric Society

President: Dr. Frederick B. Joy, Stimson Bldg., Seat
Secretary: Dr. Sherod M. Billington, Medical De
Bldg., Seattle.

Place: College Club. Time: Third Friday of e
month from September to June at 6:30 p. m.

Southwestern Pediatric Society

President: Dr. Jeanette Harrison, 1136 W. 6th S
Los Angeles.

Secretary: Dr. Henry F. Gallagher, 1930 Wilsh
Blvd., Los Angeles.

Place: Jonathan Club of Los Angeles. Time: F
Wednesday in January, March, May, September a
November.

University of Michigan Pediatric and Infectious Disease Society

President: Dr. Campbell Harvey, 35 W. Huron S
Pontiac, Mich.

Secretary: Dr. Harry A. Towsley, University of Mic
igan, Department of Pediatrics and Communica
Diseases, Ann Arbor, Mich.

Westchester County Medical Society, Pediatric Section (New York)

President: Dr. John B. Ahouse, 27 Ludlow St., Yonker
N. Y.

Secretary-Treasurer: Dr. Elvira Ostlund, 64 Highlan
Rd., Rye, N. Y.

Place: Grasslands Hospital, Valhalla, N. Y. Time
Third Thursday in October, December, February an
April.